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Collins instruction book

Collins Radio Group | Cedar Rapids, Iowa

30L-1
RF Linear Amplifier

Collins Amateur Equipment Guarantee

The Collins Amateur Equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to workmanship or materials and which are returned to Collins at its factory or its designated Service Agency, transportation prepaid, provided:

(a) Buyer presents properly executed Warranty Verification Certificate.

(b) Notice of the claimed defect is given Collins or an authorized Service Agency, or an authorized Distributor, in writing, within one (1) year from the date of purchase and goods are returned in accordance with Collins instructions.

(c) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins designs are subject to only such adjustments as Collins may obtain from the supplier thereof.

(d) Any failure due to use of equipment for purposes other than those contemplated in normal amateur operations or in violation of Collins applicable Instruction Book shall not be deemed a defect within the meaning of these provisions.

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On the opposite page are listed the Service Agencies authorized to perform warranty repair on Collins Amateur Equipments.

If you should wish to return material or equipment direct to Collins under the guarantee, you should notify Collins, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

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Collins Radio Company
Amateur Product Office
Cedar Rapids, IA 52406

INFORMATION NEEDED:

(A) Type number, name and serial number of equipment
(B) Date of delivery of equipment
(C) Date placed in service
(D) Number of hours of service
(E) Nature of trouble
(F) Cause of trouble if known
(G) Name of distributor from whom the equipment was purchased.

Equipment returned to the Service Agency or Collins for warranty repair must be accompanied with the Warranty Verification Certificate.

Out-of-warranty Repair, Modifications, Addition of Accessories, Alignment, etc.

For information on service of this type write to the address shown below. If you wish to return your equipment for repairs, etc., without prior correspondence, be sure to include the following information attached to the equipment inside the packing carton:

(1) Complete instructions detailing work to be performed.
(2) Your return address.
(3) Method of shipment by which the equipment should be returned.
(4) Special instructions.

DIRECT YOUR CORRESPONDENCE TO:

Collins Radio Company
Service Division
Cedar Rapids, Iowa

HOW TO ORDER REPLACEMENT PARTS:

When ordering replacement parts, please furnish the following information insofar as applicable:

INFORMATION NEEDED:

(A) Quantity required
(B) Collins part number (9 or 10 digit number) and description
(C) Item or symbol number obtained from parts list or schematic
(D) Collins type number, name and serial number of principal equipment
(E) Unit subassembly number (where applicable)

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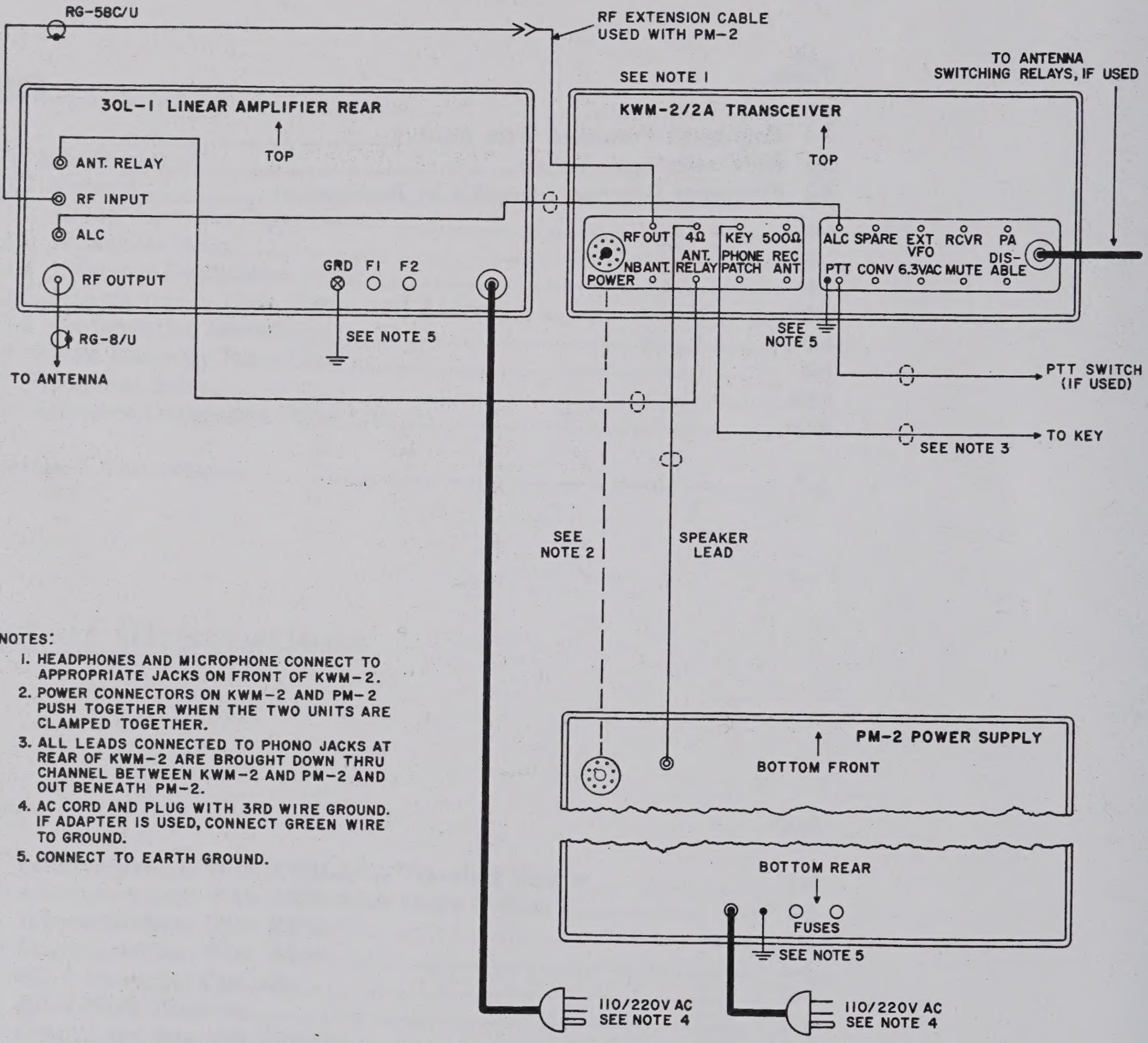


NOTES:

1. HEADPHONES AND MICROPHONE CONNECT TO APPROPRIATE JACKS ON FRONT OF KWM-2.
2. POWER CONNECTORS ON KWM-2 AND PM-2 PUSH TOGETHER WHEN THE TWO UNITS ARE CLAMPED TOGETHER.
3. ALL LEADS CONNECTED TO PHONO JACKS AT REAR OF KWM-2 ARE BROUGHT DOWN THRU CHANNEL BETWEEN KWM-2 AND PM-2 AND OUT BENEATH PM-2.
4. AC CORD AND PLUG WITH 3RD WIRE GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.
5. CONNECT TO EARTH GROUND.

Interconnections With KWM-2/2A Traveling Station
Figure 1-1

section 1
installation

1.1 UNPACKING

Carefully lift the amplifier out of the packing material. Examine for visible damage. If the amplifier has been damaged in shipment, save box and packing material, and notify the transportation company. Fill out and mail the equipment registration card.

Lift the amplifier cabinet lid. Loosen the ten screws in the rf compartment cover, slide it forward, and lift off. Remove the packing material around the tubes. Replace the cover and tighten screws. Lower the lid.

Check tuning controls and switches for freedom of action. Check the equipment included with the amplifier against table 1-1.

1.2 POWER TRANSFORMER CONNECTIONS

The 30L-1 is shipped with the transformer primary connected for 115 volts ac. If 230-volt ac operation is desired, the primary connections must be changed on terminal board TB1. Refer to figure 7-2. This board is located at the bottom of the power supply compartment, and the ac power cord is connected to it. To obtain access, refer to paragraph 4.2.

Note

When the 30L-1 is operated on 115 volts ac, the wiring between fuse box and the ac outlet should be heavy enough to provide the required current without a large drop in voltage. For example, number 12 wire should be used for a long run across a house, but for an installation close to the fuse box, the regular house wiring should serve.

Table 1-1. Equipment Furnished With 30L-1.

QUANTITY	DESCRIPTION	FUNCTION	PART NUMBER
2 ✓	Shielded cables, 4 feet long, with phono plug on each end	ALC and antenna relay cables	426-2027-000
1 ✓	RG-58C/U cable, 4 feet long, with phono plug on each end	Rf input cable	426-5076-000
6	Fuses, 8-ampere	Spares	264-4110-000
1	Ac power plug adapter	Ac power	368-0138-000
1	UG-21D/U coaxial plug	Rf output connector	357-9261-000
1	Number 6 Bristo wrench	Knob removal	024-9730-000
1	Number 6 Bristo wrench	Knob removal	024-0167-000
1	Number 8 Bristo wrench	Knob removal	024-0019-000
1	Coaxial plug (Amphenol type 82-835)	Right-angle cable plug	357-9113-000
1	Instruction book	Instructions	523-0122000
1	Log book	Station log	523-0755-820

Warning

Do not block interlock switches. Dangerous voltages are present in this equipment. The high voltage is interlocked with the amplifier covers. Make no attempt to put the amplifier into service until all compartment covers are in place.

1.3 CABLING

Interconnections with other station equipments are described in the following paragraphs. Assembly instructions for type N connectors, such as the UG-21D/U, are shown in figure 7-1.

1.3.1 Traveling Station

The 30L-1 is particularly applicable to traveling station use in conjunction with portable transceivers such as the KWM-2/2A. Refer to figure 1-1. In this service, make sure the transformer primary is connected for proper line voltage.

1.3.2 Home Station

Connect to KWM-2/2A, KWM-1, or S-Line as shown in figures 1-2, 1-3, and 1-4.

1.3.3 KWM-1 Serial Numbers Above 861

If KWM-1 models above serial number 861 are used with the 30L-1, it will be necessary to bring out ALC and ground-on-transmit connections from 516F-1 power cable plug P-1 as shown in figure 1-3. Make the ALC connection to terminal 19, and the ground-on-transmit connection to terminal 20. Use a shielded wire, and connect to 30L-1 ALC and ANT. RELAY jacks with phono plugs.

1.3.4 KWM-1 Serial Numbers Below 861

If models below serial number 861 are used with the 30L-1, it is necessary to make connections inside the KWM-1 for ALC and antenna relay control.

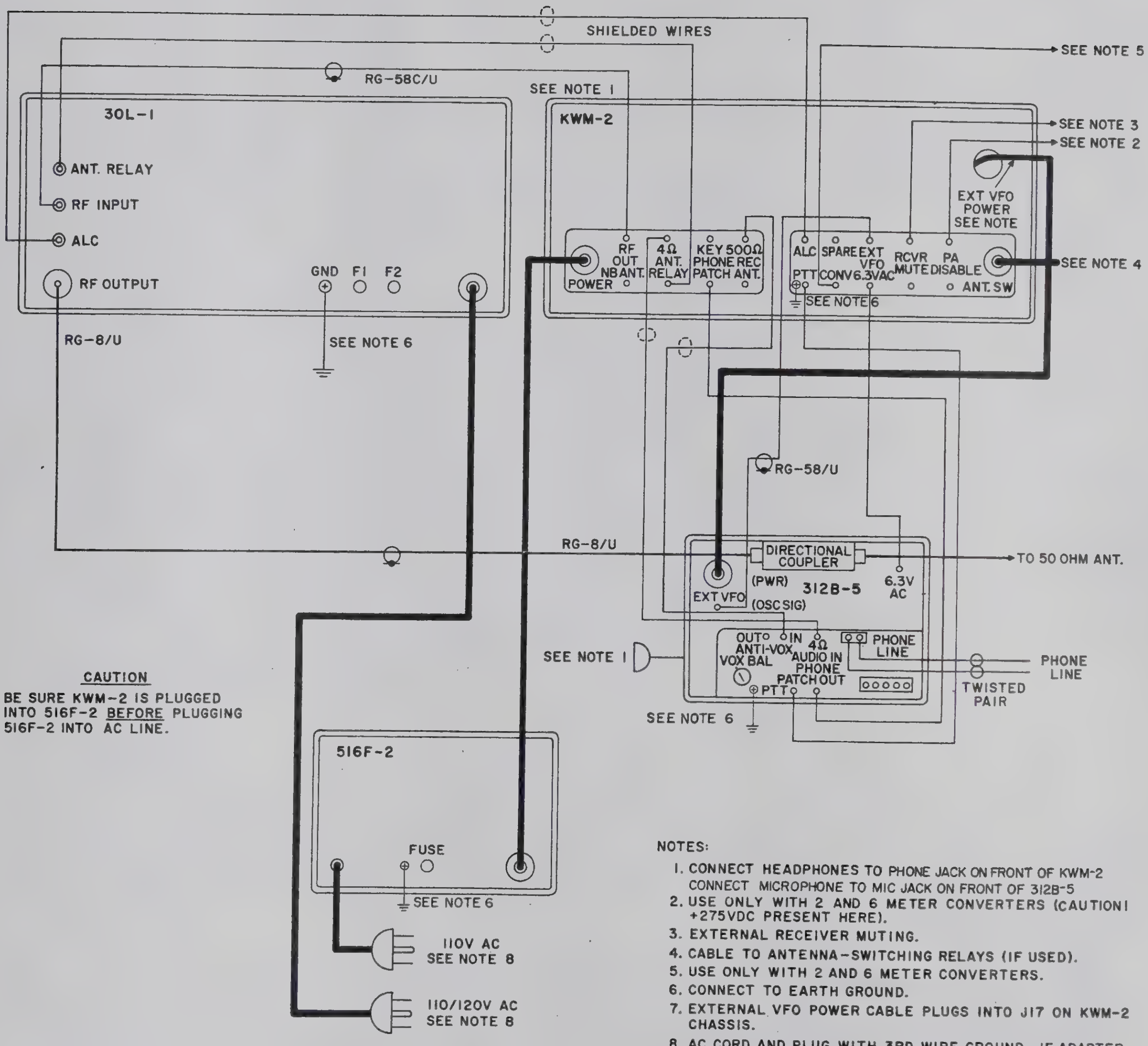
a. Use an ohmmeter to locate the feedthrough capacitor, C169, which is connected to pin 19 of J5.
b. Connect a wire from this feedthrough capacitor to pin 7 of tube socket XV10.
c. Using an ohmmeter to trace the wiring, locate the feedthrough capacitor, C206, which is connected to terminal 20 of J5 in KWM-1.
d. Connect a wire from terminal 8 of TB1 in KWM-1 to C206.
e. Make corresponding breakout connection to P1 terminal 19 with shielded wire, and connect to the 30L-1 ALC jack with a phono plug.
f. Refer to figure 1-3, detail A. External to the KWM-1, connect a 10,000-ohm, 5-watt resistor and a relay coil in series from J5 terminal 20 to a ground on the rear of the KWM-1 chassis. Use a relay such as Collins part number 972-1346-000, with a 10,000-ohm, 10-mA coil, and a set of normally open contacts.
g. Connect the normally open contacts through a piece of shielded wire and a phono plug to the 30L-1 ANT. RELAY jack.

Warning

Be careful to avoid contact with the 260-volt B+ present on the relay coil and resistor connections. It is recommended that this circuitry be enclosed in a suitable shield box.

1.4 INSTALLATION WITH OTHER MAKES OF EXCITERS

Connect the rf output of the exciter to the RF INPUT jack on the 30L-1. Existing antenna switching equipment between receiver and exciter can be left intact. To transmit, a ground must be supplied to the ANT. RELAY jack on the 30L-1. This removes blocking bias from the 811A tubes and energizes the internal antenna relay. Due to the variety of circuits involved, specific instructions for use of ALC cannot be given. A detailed study of paragraph 3.7 will be helpful if it is desired to utilize the ALC provisions in the 30L-1.



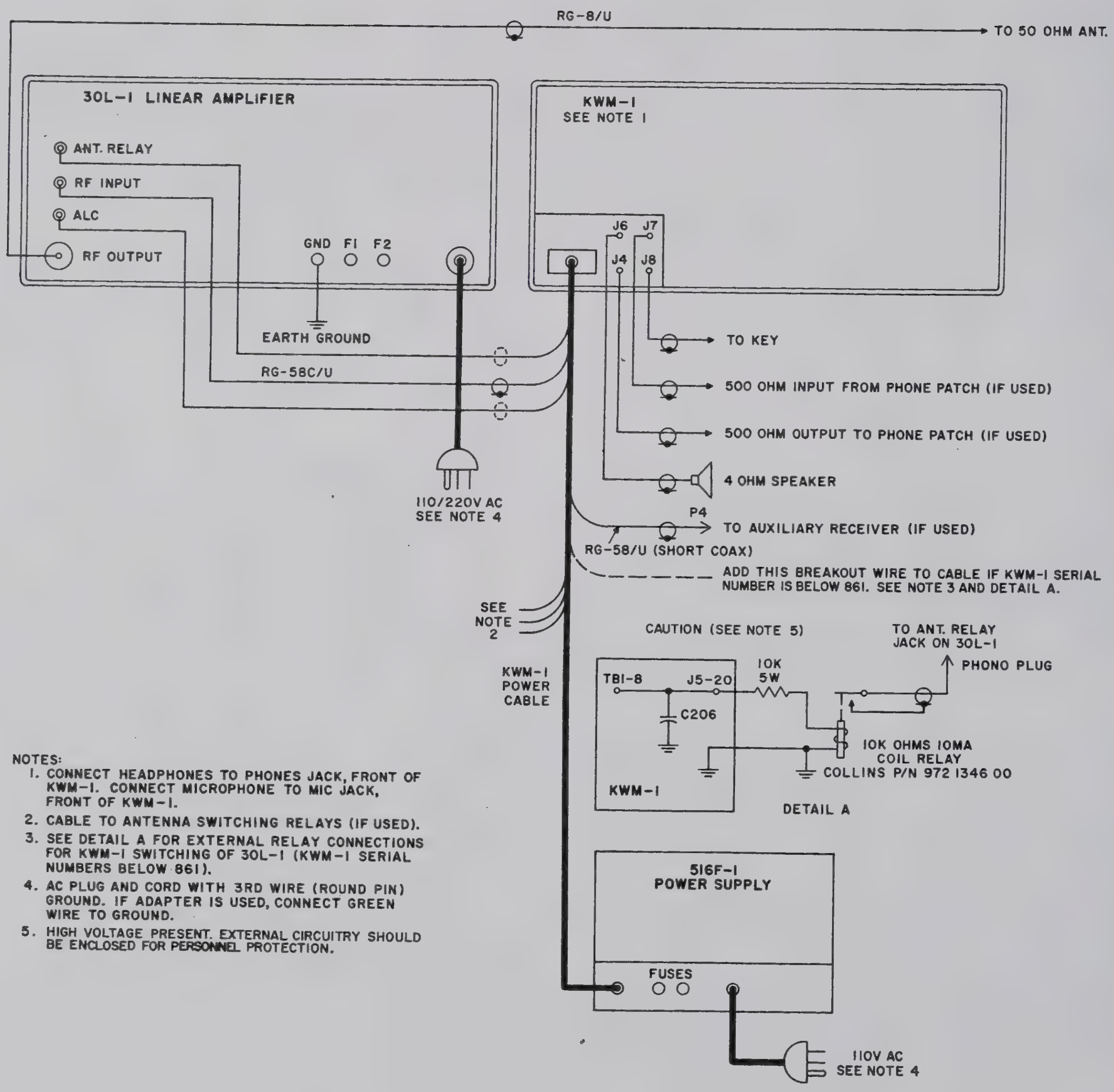
CAUTION

BE SURE KWM-2 IS PLUGGED INTO 516F-2 BEFORE PLUGGING 516F-2 INTO AC LINE.

NOTES:

1. CONNECT HEADPHONES TO PHONE JACK ON FRONT OF KWM-2 CONNECT MICROPHONE TO MIC JACK ON FRONT OF 312B-5
2. USE ONLY WITH 2 AND 6 METER CONVERTERS (CAUTION! +275VDC PRESENT HERE).
3. EXTERNAL RECEIVER MUTING.
4. CABLE TO ANTENNA-SWITCHING RELAYS (IF USED).
5. USE ONLY WITH 2 AND 6 METER CONVERTERS.
6. CONNECT TO EARTH GROUND.
7. EXTERNAL VFO POWER CABLE PLUGS INTO J17 ON KWM-2 CHASSIS.
8. AC CORD AND PLUG WITH 3RD WIRE GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.

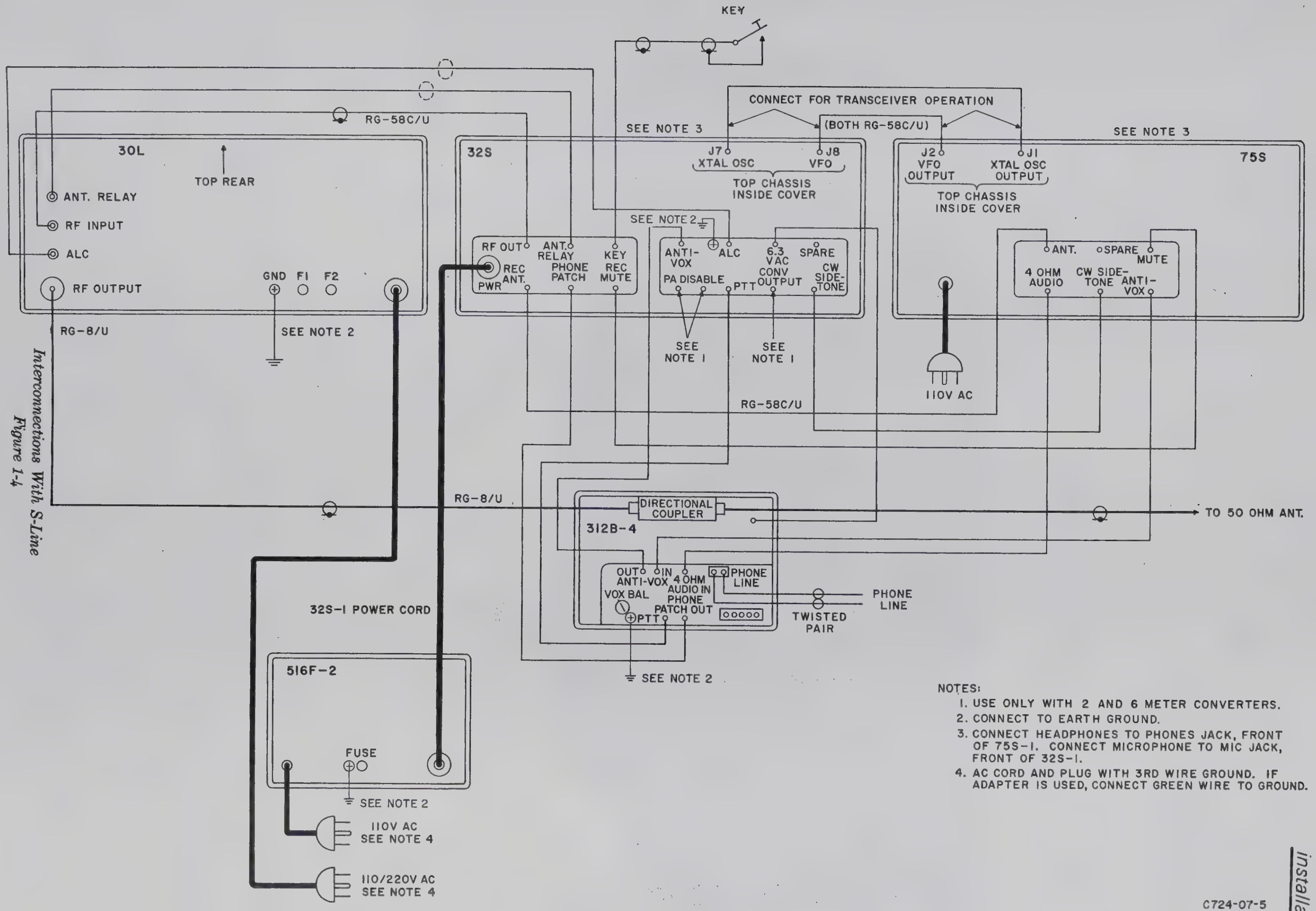
Interconnections With KWM-2/2A Home Station
Figure 1-2



NOTES:

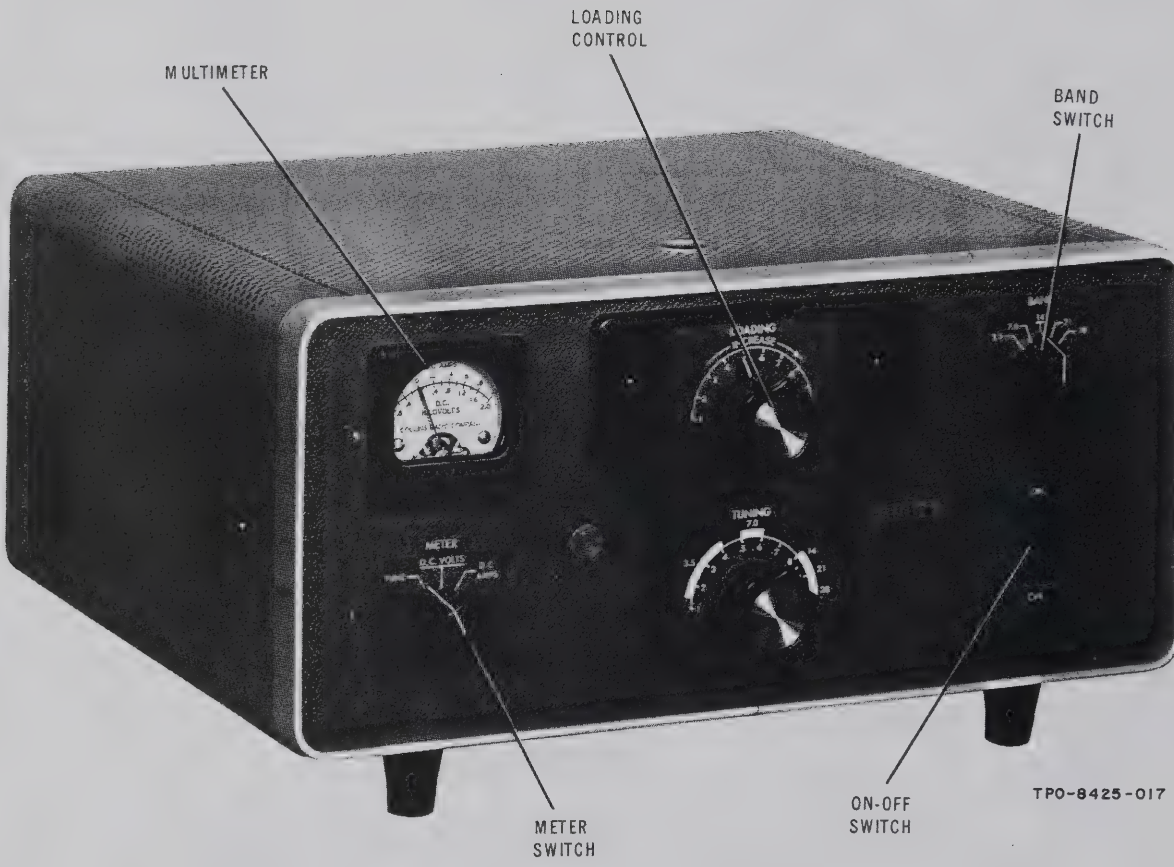
1. CONNECT HEADPHONES TO PHONES JACK, FRONT OF KWM-1. CONNECT MICROPHONE TO MIC JACK, FRONT OF KWM-1.
2. CABLE TO ANTENNA SWITCHING RELAYS (IF USED).
3. SEE DETAIL A FOR EXTERNAL RELAY CONNECTIONS FOR KWM-1 SWITCHING OF 30L-1 (KWM-1 SERIAL NUMBERS BELOW 861).
4. AC PLUG AND CORD WITH 3RD WIRE (ROUND PIN) GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.
5. HIGH VOLTAGE PRESENT. EXTERNAL CIRCUITRY SHOULD BE ENCLOSED FOR PERSONNEL PROTECTION.

Interconnections With KWM-1
Figure 1-3



NOTES:
1. USE ONLY WITH 2 AND 6 METER CONVERTERS.
2. CONNECT TO EARTH GROUND.
3. CONNECT HEADPHONES TO PHONES JACK, FRONT OF 75S-1. CONNECT MICROPHONE TO MIC JACK, FRONT OF 32S-1.
4. AC CORD AND PLUG WITH 3RD WIRE GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.

Interconnections With S-Line
Figure 1-4



30L-1 Operating Controls
Figure 2-1

section 2
operation

2.1 OPERATION IN AMATEUR BANDS

Table 2-1 shows normal and full-scale meter readings. If the exciter is a KWM-2/2A or S-Line, set exciter BIAS ADJUST to produce an idling plate current of 50 mA. Tune and load exciter according to exciter instruction book; however, load only to 200 mA.

a. Connect the antenna for the band in use to the RF OUTPUT jack on the 30L-1. (When the ON-OFF switch is in the OFF position, the transfer relay in the 30L-1 connects the antenna to the exciter.)
b. Make sure the ON-OFF switch in the 30L-1 is in the OFF position as shown in figure 2-1.
c. Tune and load the exciter into the antenna. If the antenna does not present a nearly 50-ohm resistive load, the exciter can be tuned and loaded into a 50-ohm dummy load such as the DL-1. When switched to the input of the 30L-1, the exciter will then remain in tune.
d. If using a Collins exciter, switch back to TUNE position, and set MIC GAIN to OFF position.
e. Set the 30L-1 METER switch to the TUNE position.
f. Set BAND switch to same band as that of the exciter, LOADING control to 1 on the dial, and TUNING control to white area for the band in use.
g. Press the 30L-1 ON-OFF switch to the ON position.
h. Set MIC GAIN control to about 3/4 scale. When using exciters other than KWM-2/2A or S-Line types, set microphone gain or carrier insertion control to drive 30L-1 to approximately 300 mA for tuneup. Apply drive for short periods only to prevent overloading power supply or overheating tubes.
i. Immediately adjust TUNING control for multimeter dip.
j. Alternately adjust TUNING and LOADING controls for zero multimeter reading. The meter will indicate zero at the dip when the amplifier is properly tuned and loaded. Always make the TUNING adjustment for meter dip as the last adjustment.
k. Switch the exciter to the desired sideband or to CW, and set the exciter MIC GAIN control to provide 6-dB ALC indication. The station is now ready to operate at rated power input.
l. Once the equipment has been tuned up on a given frequency, the 30L-1 may be switched in or out of the circuit at will by operating the ON-OFF switch. Output power from the amplifier is available instantly with no warmup period required.

Table 2-1. Multimeter Scale Values.

METER SWITCH SETTING	FULL-SCALE INDICATION	NORMAL INDICATION
Tune	Not applicable	Zero when 30L-1 is properly loaded
D. C. VOLTS	2000 volts	1800 volts (no modulation) 1600 volts (at rated load)
D. C. AMPS	1.0 A (1000 mA)	600 mA (keydown CW) 300-350 mA (SSB voice peaks) 110 mA (keyed, no excitation)

Caution

Do not operate the 30L-1 into a load presenting a vswr greater than 2 to 1. The equipment might not function properly and damage can result. Do not operate the amplifier in continuous keydown condition at full input for more than 30 seconds. The power supply can be damaged. Do not use the 30L-1 in FSK, AM, or FM service. Do not use slow-blow fuses, or fuses larger than the 8-ampere type supplied.

2.2 OPERATION WITH OTHER MAKES OF EXCITERS

Tune according to the procedure outlined in paragraph 2.1. If ALC is not used, do not overdrive either the exciter or the final amplifier. Normal plate current meter readings for the 30L-1 are from 300 to 350 mA on voice peaks. Actual plate current under these conditions will peak at approximately 600 to 700 mA. Be sure the exciter is capable of producing the required drive without excessive distortion. If not, the amplifier should be operated at reduced level.

2.3 OPERATION OUTSIDE AMATEUR BANDS

Operation outside amateur band limits requires retuning of the 30L-1 input circuits. This is necessary to present the proper load impedance to the exciter. For procedure, refer to paragraph 4.4.

section 3

principles of operation

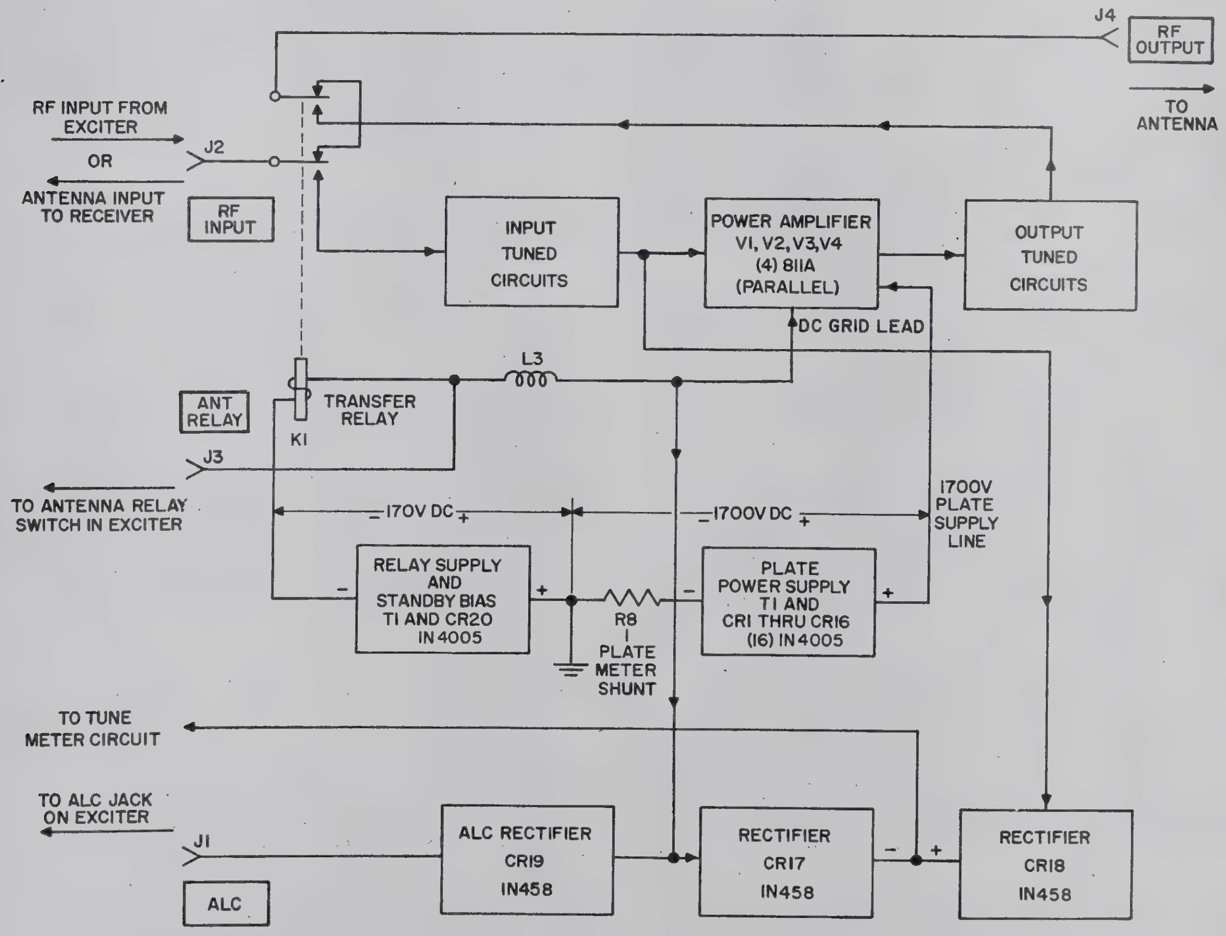
3.1 GENERAL

The 30L-1 is a portable rf linear power amplifier, and includes its own solid-state plate power and bias supplies. It is capable of 1000 watts pep input power in SSB or 1000 watts dc input in CW service with any exciter (such as the 32S-( ) or KWM-( )) capable of 70 watts pep nominal output. It covers the amateur bands between 3.5 and 29.7 MHz. In addition, the amplifier may be operated outside the amateur bands over certain ranges of frequency. These ranges are specified in table 4-1.

The power amplifier stage uses four 811A triodes connected in parallel with cathode drive.

3.2 INPUT CIRCUITS

Refer to figures 3-1 and 7-2. Broadband pi-network circuits couple the exciting signal into the cathode circuits of the power amplifier tubes. The tuned input circuits provide increased efficiency, reduced distortion, and a better impedance match for the exciter than normally would be obtained with an



30L-1 Block Diagram
Figure 3-1

untuned input. Tuning adjustments are not required except for operation outside the amateur bands.

3.3 OUTPUT CIRCUITS

The plate circuit of the power amplifier is tuned by a pi network consisting of C32, L9, L10, and C33. Capacitor C32 resonates the tank circuit at the frequency in use. It is adjusted by the TUNING control on the front panel. The four-gang capacitor, C33, is adjusted by the LOADING control to match the pi-network circuit to the impedance presented by the antenna and feed system in use. Output from the plate tank circuit is connected through the contacts of antenna changeover relay, K1, to the antenna when the control circuits are energized.

3.4 POWER SUPPLY CIRCUITS

Two dc power supplies and one ac filament supply are included in the 30L-1. The amplifier may be connected to a 115-volt single-phase or to a 230-volt, 3-wire, single-phase source. Power transformer T1 has two primary windings. These windings are connected in parallel for 115-volt operation, and in series for 230-volt operation. The 6.3-volt secondary winding provides filament power for the 811A tubes through rf choke L8. It also powers the pilot lamp in the meter. Another secondary winding applies voltage through surge resistor R9 to semiconductor rectifier CR20. This is a half-wave circuit connected to furnish blocking bias to the amplifier tubes under receive conditions and operating bias when transmitting. It also furnishes power for changeover relay K1. Voltage from the third secondary winding is applied to semiconductor rectifier strings connected in a full-wave voltage doubler configuration. These strings consist of CR1-CR8, C44-C51 in one string, and CR9-CR16, C52-C59 in the other. The parallel capacitors equalize the reverse voltages impressed across the diode junctions and protect against damage by transients. This supply provides approximately 1600 volts dc under load for the amplifier tube plates, and approximately 1800 volts unloaded.

3.5 SAFETY INTERLOCK CIRCUITS

The rf and power supply compartment covers operate safety interlock switches. Switches S5 and S7 are located in the power supply compartment and switch S6 is located in the rf compartment. Cover removal closes these switches and shorts the high voltage to ground. This prevents accidental contact with high-voltage dc which is present in either compartment.

Warning

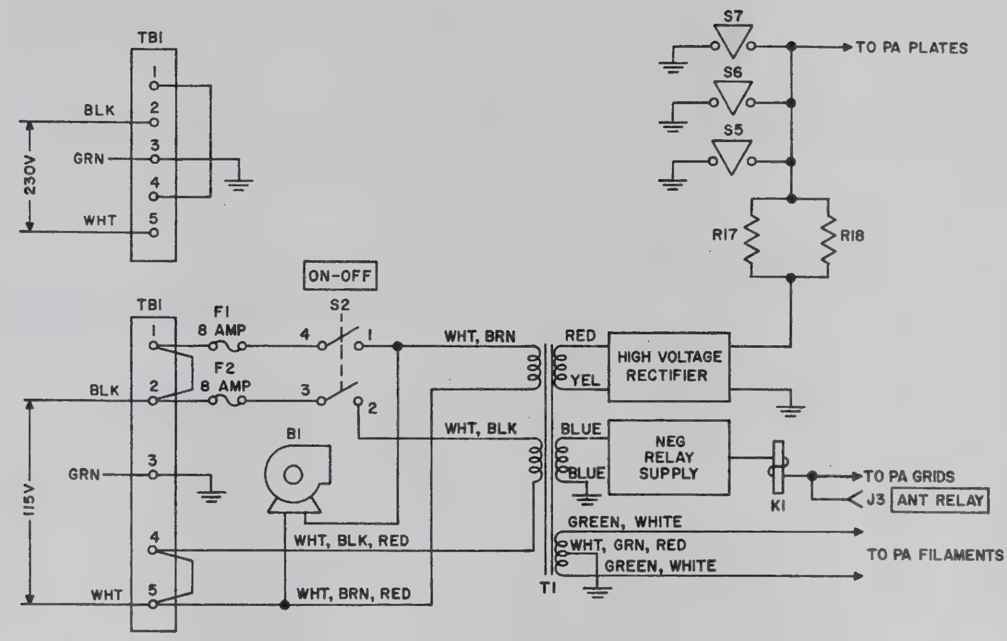
Do not block interlock switches. Contact with voltages in this equipment can be fatal. Disconnect the ac power plug before removing any of the covers.

3.6 POWER CONTROL CIRCUITS

Refer to figure 3-2. The front-panel ON-OFF switch breaks one side of the ac line in the OFF position. When operated to the ON position, ac power is applied to the power transformer primaries and the tube-cooling fan B1. Overload protection is provided by 8-ampere fuses F1 and F2. These are used for both 115-volt ac and 230-volt ac operation.

3.7 ALC CIRCUITS

Automatic load control (ALC) is a compressor circuit operating at radio frequencies. In the 30L-1, the grid-to-plate capacitances of the amplifier tubes in conjunction with capacitors C22, C23, C24, and C25 form capacitive voltage dividers. Under modulation, an rf voltage is developed across these dividers and L3. It is coupled to the ALC rectifier CR19 through capacitor C72. The rf voltage is rectified and filtered to produce a negative dc control voltage which is porportional to the modulation level. (The load resistor for CR19 must be provided by the exciter ALC circuits.) This voltage is applied by the control grid of a low-level rf amplifier tube or tubes in the exciter. The time constants of these circuits have a fast attack, slow-release characteristic. The ALC threshold is controlled by the amount of reverse bias on CR19. This voltage is developed across R7 in the plate supply bleeder network, and varied by potentiometer R16. It is adjusted at the factory for optimum operation in conjunction with the internal ALC circuits of exciters such as the KWM-( ) or 32S-( ). Normally it will not need readjustment.



Control and Interlock Circuits
Figure 3-2

This system allows a high average level of modulation and optimum power output from the amplifier, within the rated limits of distortion.

3.8 METERING CIRCUITS

One section of the METER switch, S3, selects the output voltage from a tuning and loading bridge circuit. This circuit consists of the power amplifier tubes, CR17, CR18, and the associated load resistors and filter networks. The bridge is balanced when the plate circuit TUNING and LOADING controls are adjusted to present the proper load impedance to the power amplifier plates. The meter then will read zero.

The second section of the meter switch connects the meter to the plate supply through a 4-megohm multiplier resistor to indicate the dc voltage output. It is read on the D.C. KILOVOLT scale.

The third section of the meter switch connects the meter, through R10, across shunt R8. This indicates power amplifier plate current. It is read on the D.C. AMPS scale.

section 4

service instructions

4.1 GENERAL

Adjustment of the 30L-1 rf input circuits requires the following equipment.

a. Rf wattmeter and directional coupler, such as are included in the 312B-4 or 312B-5 Station Controls, or the 302C-3 Directional Wattmeter.
b. 50-ohm, 500-watt, nonreactive dummy load. (For short tests where keydown conditions do not exceed 30 seconds, the DL-1 Dummy Load can be used when applicable.)

A fuse consisting of a number 28 wire in the center-tap ground return of the filament winding of T1 is included to protect the pa tubes from excessive plate current. The fuse is connected between the two outer lugs of a terminal strip located near R11 in the power supply compartment (refer to figure 6-1). Under some conditions, the amplifier may appear to function normally even though this fuse has blown; however, this causes hum to appear on the output signal. Check for shorts in the filament circuit.

4.2 REMOVAL OF CABINET AND COVERS

a. Lift the cabinet lid and remove the two Phillips-head screws located at the top-front edge of the cabinet. Remove the four feet and the Phillips-head screw located midway between the rear feet. Push the amplifier forward from the rear until the front panel projects from the cabinet about a half inch. Grasping the front panel at the edges, carefully slide the amplifier out of the cabinet, making sure the ac power cord clears.
b. To remove the rf compartment upper cover, loosen the ten screws about three turns, slide the cover toward the front panel, and lift off.
c. To remove the power supply compartment upper cover, remove screws located about the edges of the cover.
d. To remove the bottom cover, remove two round Phillips-head screws from each end of the cover and three flat-head screws near the middle of the cover, and lift off.

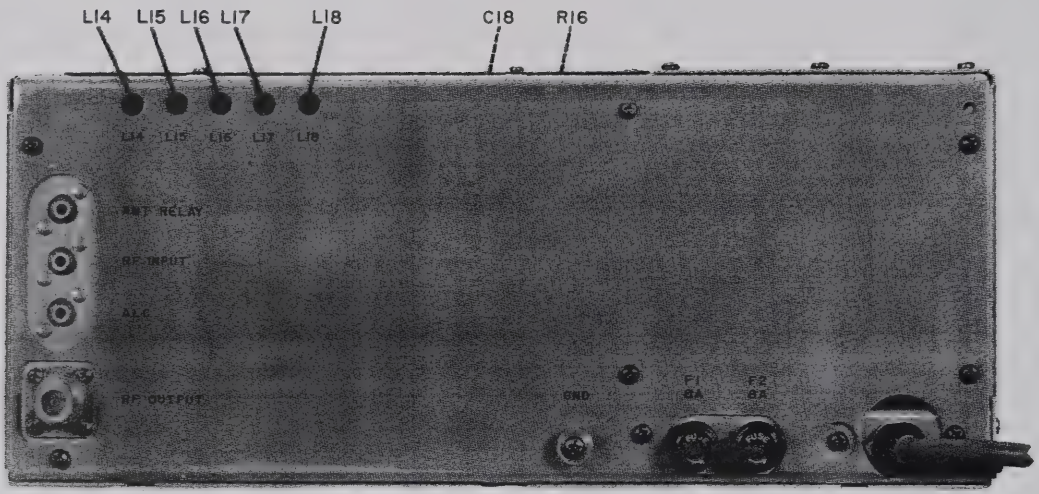
4.3 BLOWER LUBRICATION

Every 1000 hours of operation (or 6 months, whichever comes first), lubricate the blower motor bearings with three or four drops of sewing machine oil. Do not overlubricate.

4.4 ALIGNMENT OF RF INPUT CIRCUITS

a. Remove the amplifier from its cabinet as outlined in paragraph 4.2. Do not remove any of the covers. To align for amateur band coverage, proceed as follows:
b. Connect a directional wattmeter (312B-4/5 station control wattmeter, 302C-3 directional wattmeter, or equivalent) between the exciter output and the RF INPUT jack J2 on the 30L-1. Connect a 50-ohm, 1000-watt dummy load to RF OUTPUT jack J4.
c. Tune and load the 30L-1 at 28.5 MHz. Position the 30L-1 METER switch to the TUNE position.
d. Apply 30 watts of forward drive power to the 30L-1 (as monitored on the wattmeter installed in step b). When using the KWM-2/2A or S-Line equipment, this can be done by positioning the EMISSION switch to the LOCK KEY position and adjusting the MIC GAIN control to the desired level.
e. Tune L14 until minimum reflected power is indicated on the wattmeter installed in step b, readjusting the exciter as necessary to maintain 30 watts of forward drive power. Continue adjusting L14 for minimum reflected power (the reflected power level should not exceed 3.3 watts). Refer to figure 4-1 for location of L14.
f. Repeat the above procedure at the middle frequency of each band, adjusting L15, L16, L17, and L18 when aligning the 21.0-, 14.0-, 7.0-, and 3.5-MHz bands respectively.

For general coverage, use the same procedure as above, except set the exciter to a frequency which is in the middle of the desired band. Useful bandwidth at the new alignment frequencies is approximately the same as that for the amateur bands.



Location of Adjustments
Figure 4-1

Do not attempt alignment to place the new operating bands outside the range listed in table 4-1 for the BAND switch positions indicated. Also, do not attempt amateur band operation on a BAND switch position for which the tuned circuits have been realigned for out-of-band operation.

4.5 METER LAMP REPLACEMENT

To replace the meter lamp, remove the bracket to which the socket is fastened. It is held by a small machine screw located at the rear of the meter. Replace the lamp with a type 47 or equivalent.

4.6 TUBE REPLACEMENT

The tubes may be replaced without removing the amplifier cabinet by removing the rf compartment top cover and installing new tubes from the top. The following is an alternate method which provides better access to the tube sockets.

Remove the cabinet, rf compartment top cover, and bottom cover as outlined in paragraph 4.2. Disconnect plate connectors and remove old tubes. Install the upper pair of replacements from the top of the amplifier. Install the lower pair from the bottom. The locating pin on the base of each of the tubes should point away from the power supply compartment. Attach plate leads, making sure they clear other components. Replace covers and cabinet.

Warning

Do not block interlock switches. Dangerous voltages are present in this equipment. The high voltage is interlocked with the amplifier covers. Make no attempt to put the amplifier into service until the procedure outlined above has been completed.

4.7 TUNE METER ADJUSTMENT

a. Make normal connections between the exciter and 30L-1.

Table 4-1. Frequency Coverage Allowable by Realignment.

BAND SWITCH SETTINGS	LOWER LIMIT (MHz)	UPPER LIMIT (MHz)
3.5	3.3	6.0
7.0	6.0	9.5
14	9.5	16.0
21	16.0	22.0
28	22.0	30.0

b. Connect a 50-ohm, 1000-watt dummy load to RF OUTPUT jack J4.
c. Connect the vertical input of a wide-band oscilloscope across the dummy load.
d. Introduce a 2-tone audio input signal (1200 and 1900 Hz at approximately 15 mV) to the exciter microphone input jack.
e. Tune and load the 30L-1 at 14.3 MHz.
f. Position the 30L-1 METER switch to the TUNE position, and decrease the drive level to zero (when using the KWM-2/2A or S-Line equipment, this can be done by positioning the MIC GAIN control completely counterclockwise).
g. Set up the exciter for upper sideband operation (when using the KWM-2/2A or S-Line equipment this can be done by positioning the function switch to the USB position).
h. Monitoring the output waveform on the oscilloscope, increase the exciter output (when using the KWM-2/2A or S-Line equipment, this is done by turning the MIC GAIN control in the clockwise direction) until the 30L-1 output ceases to increase, or peaks on the oscilloscope indication begin to flatten.
i. Make sure that the exciter and 30L-1 are tuned properly by making fine adjustments to both units until maximum output, as monitored on the oscilloscope, is obtained without peak flattening. The output voltage across the dummy load should be not less than 450 volts peak to peak (160 volts rms).
j. Adjust the exciter to give approximately 300 mA of 30L-1 plate current at dip (when using the KWM-2/2A or S-Line equipment, this can be done by positioning the function switch to the TUNE position and positioning the MIC GAIN control approximately 3/4 fully clockwise). An access hole is provided to adjust C18 through the top cover of the 30L-1 with the cabinet lid raised. Refer to figure 6-2 for location of C18. Adjust C18 with an alignment tool to produce a reading of zero on the 30L-1 multimeter.

4.8 ALC THRESHOLD ADJUSTMENT

a. Perform steps a, b, d, and e of paragraph 4.7. Omit step c.
b. Disconnect ALC cable between exciter and 30L-1.
c. Using USB or LSB emission, increase drive until indicated ALC is about 4 dB (S-4) on exciter meter.
d. Reconnect ALC cable, and adjust R16 with insulated tuning tool for a 3-dB (one S-unit) increase in ALC.

Caution

Adjustments to tune meter and ALC circuits should not be made unless the need has been clearly determined. If trouble is experienced, check pa tubes and exciter first. Imporper adjustments can result in damage to amplifier and a distorted output signal. Do not attempt to make adjustments without proper test equipment.

section 5

specifications

Size	6-9/16 in high, 14-3/4 in wide, 13-3/4 in deep (overall).
Weight	38 pounds.
Frequency range	3.5 to 29.7 MHz, covering all amateur bands. By retuning input coils as necessary, the following general-coverage bands may be covered:

FREQUENCY BAND (MHz)	TOTAL COVERAGE (MHz)
3.5	3.4 - 6.0
7.0	6.0 - 9.5
14	9.5 - 16.0
21	16.0 - 22.0
28	22.0 - 30.0

Mode	SSB or CW.
Type of service	SSB - continuous voice modulation. CW - 50% duty cycle (continuous keydown conditions not to exceed 30 seconds duration).
Plate power input	CW - 1000 watts. SSB - Nominal pep input of 1000 watts with speech. Third-order distortion products at this level are at least 30 dB down from signal.
Drive power requirements	70 watts.
Primary power requirements	230 volts ac ±10%, 3-wire, single phase, at 7.5 amperes max, or 115 volts ac ±10% at 15 amperes max, 50 to 400 Hz. Operation from a line frequency other than 50 to 60 Hz requires an auxiliary 60-Hz supply for fan motor.
Input impedance	52 ohms.
Output impedance	52 ohms unbalanced with vswr not to exceed 2 to 1 on the amateur bands.
Noise level	40 dB down from output signal with 1-kW single-tone input.
Harmonic output	All harmonics at least 40 dB down from output signal.
Vacuum tubes	Type 811A triodes (4).
Available accessories	Model 351E-4 mounting plate (Collins part number 522-1482-003). This plate can be used when installing the 30L-1 in an airplane, boat, or similar location requiring a rigid mount. A luggage-type carrying case is also available.

section 6

parts list

6.1 INTRODUCTION

6.1.1 General

The purpose of this parts list is for identification, requisition, and issuance of parts.

Part numbers listed in this parts list meet critical equipment design specification requirements. Use only the part numbers specified in this parts list for replacement of parts.

6.1.2 Group Assembly Parts List

FIG - ITEM Column — Digits preceding the dash refer to the figure number. Digits following the dash are the item numbers assigned in sequence to correspond with the item numbers on the illustration.

PART NO Column — Listed are MIL standard, vendor, or Collins Radio Company part numbers. Collins part numbering system consists of 10 digits as follows: a 3-digit family number, a 4-digit serial number, and a 3-digit dash number.

INDENT Column — Items are coded 1, 2, 3, etc, to indicate the relationship to the next higher assembly.

DESCRIPTION Column — Lists the noun name, modifier, required descriptive information, federal manufacturer code, reference designation, attaching part (AP), reference to other figures, and effectivities.

Attaching parts are identified by (AP) following the part or parts they attach.

Effectivities are identified by the following methods: MCN (Manufacturer Control Number) 101 and up, CI (Configuration Identifier) 5-digit number, REV (Revision Identifier) dash (-) denotes original, letter A first change, letter B second change, etc. One of the above identifiers is listed on each chassis and/or replaceable assembly. Service Bulletins are identified by SB-1, SB-2, etc.

USABLE ON CODE Column — Part variations within the groups of equipment are indicated by a letter code (A, B, C, etc). The absence of the code indicates parts apply to all models.

UNITS PER ASSY Column — Quantities specified are per item number. The letters AR denote the selection of parts as required. The letters RF refer to an assembly completely assembled on a preceding figure and illustration.

6.1.3 Numerical Index

PART NUMBER Column — Part numbers are listed in alphanumeric sequence.

FIG - ITEM Column — Digits preceding the dash refer to the figure number. Digits following the dash are the item numbers.

TTL REQ Column — Listed is the total quantity of parts or assemblies covered in the group assembly parts list.

6.1.4 Reference Designation Index

REFERENCE DESIGNATION Column — Reference designations are listed in alphanumeric sequence.

FIG - ITEM Column — Digits preceding the dash refer to the figure number. Digits following the dash are the item numbers.

PART NUMBER Column — Part numbers listed are for items that have reference designations assigned.

6.1.5 Manufacturer's Code, Name, and Address

CODE	MANUFACTURER'S NAME AND ADDRESS
A0473	Avery Label Co., Inc. Div. of Avery Adhesive Prod., Inc. Peoria, IL 61600
A1334	Joyner Corp. Ocoess, MN
02660	Bunker-Ramo Corp., The Amphenol Connector Div. 2801 S. 25th Ave. Broadview, IL 60153
03562	Bartlett-Emery Instrument Co. 14th St. and Ave. M Fort Madison, IA 52627
04713	Motorola, Inc. Semiconductor Products Div. 5005 E. McDowell Rd. Phoenix, AZ 85008
05624	Barber-Colman Co. 1300 Rock St. Rockford, IL 61101
07263	Fairchild Semiconductor A Div. of Fairchild Camera and Instrument Corp. 464 Ellis St. Mountain View, CA 94040
07688	Joint Electron Device Engineering Council
07716	TRW Electronic Components IRC Burlington Div. 2850 Mt. Pleasant Burlington, IA 52601
07886	National Radio Co., Inc. Commercial Products Div. 78 Stone Pl. Melrose, MA 02176
08556	Bell Electric Co. 2600 W. 50th St. Chicago, IL 60632
08664	Bristol Co. Div. of American Chain and Cable Co., Inc. 40 Bristol St. Waterbury, CT 06720
09250	Electro Assemblies, Inc. 4338 W. Montrose Ave. Chicago, IL 60641
09922	Burndy Corp. Richards Ave. Norwalk, CT 06852
12127	Louis Engineering Co. Suite 102. 2525 W. Peterson Ave. Chicago, IL 60645
12697	Clarostat Mfg. Co., Inc. Lower Washington St. Dover, NH 03820
28520	Heyman Mfg. Co. 147 N. Michigan Ave. Kenilworth, NJ 07033
39317	Mc Gill Mfg. Co., Inc. 907 N. Lafayette St. Valparaiso, IN 46383
44655	Ohmite Mfg. Co. 3601 W. Howard St. Skokie, IL 60076
49671	RCA Corp. 30 Rockefeller Plaza New York, NY 10020
56289	Sprague Electric Co. North Adams, MA 01247
70371	American Lava Corp. Cherokee Blvd. and Manufacturers Rd. Chattanooga, TN 37405

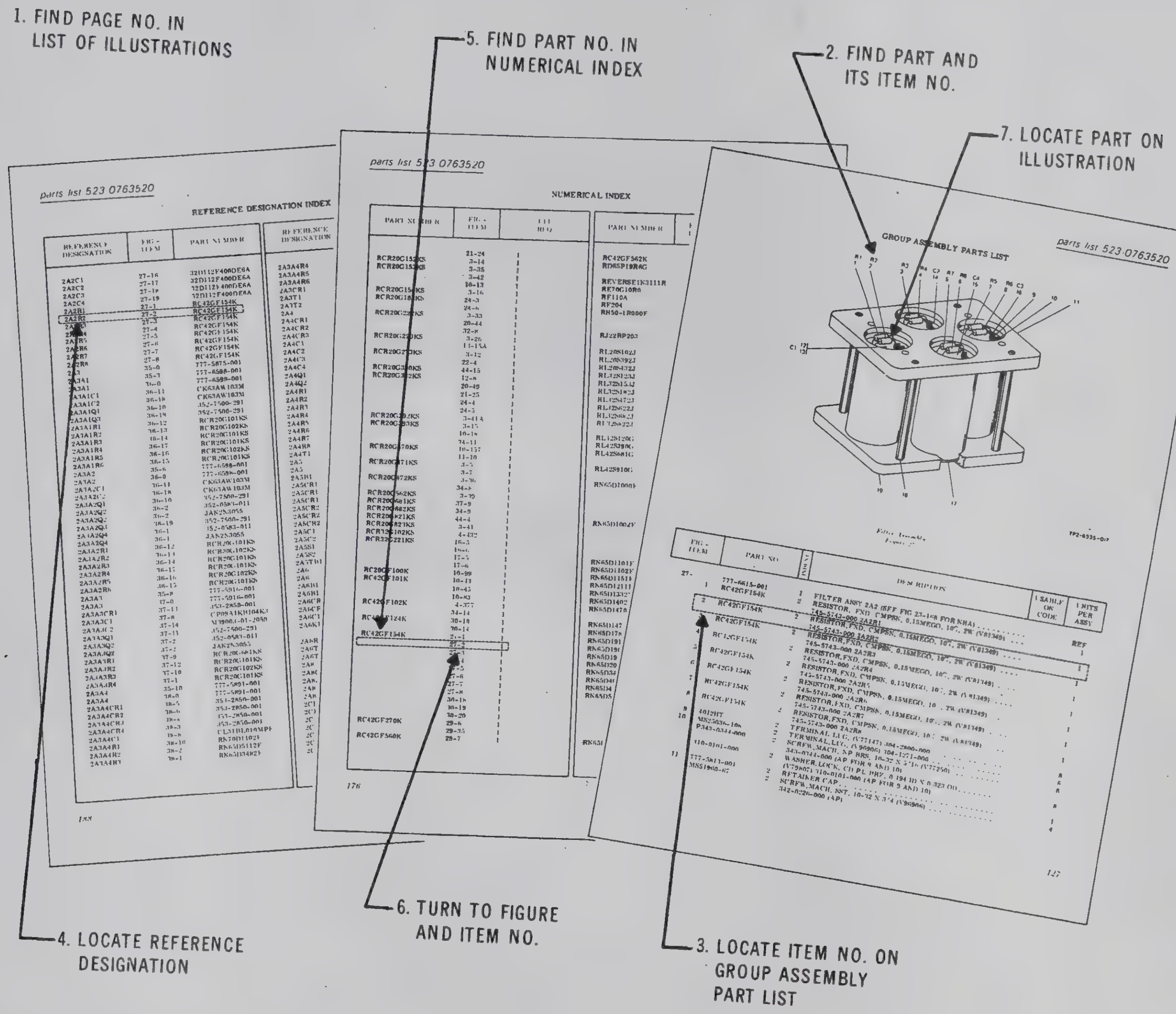
CODE	MANUFACTURER'S NAME AND ADDRESS
71400	Bussmann Mfg. Div. of McGraw Edison Co. 2536 W. University St. St. Louis, MO 63017
71590	Centralab Electronics Div. of Globe-Union, Inc. 5757 N. Green Bay Ave. Milwaukee, WI 53201
71700	General Cable Corp. Cornish Wire Co. Div. 101 Water St. Williamstown, MA 01267
71785	TRW Electronic Components Cinch Div. 1501 Morse Ave. Elk Grove Village, IL 60007
72136	Electro Motive Mfg. Co. Inc., The S. Park and John Streets Willimantic, CT 06226
72982	Erie Technological Products, Inc. 644 W. 12th St. Erie, PA 16512
74048	Meyercord Co. 365 E. North Ave. Wheaton, IL 60187
74970	Johnson, E. F., Co. 299 10th Ave. SW Waseca, MN 56093
75543	Lavelle Rubber Co. 424 N. Wood Chicago, IL 60622
75915	Littlefuse, Inc. 800 E. Northwest Hwy. Des Plaines, IL 60016
76487	Millen, James, Mfg. Co., Inc. 150 Exchange St. Malden, MA 02148
76854	Oak Mfg. Co. Div. of Oak Electro/Netics Corp. S. Main St. Crystal Lake, IL 60014
77342	AMF, Inc. Potter and Brumfield Div. 1200 E. Broadway Princeton, IN 47570
80008	Electro Engineering Works, Inc. 401 Preda St. San Leandro, CA 94577
81143	Isolantite Mfg. Corp. 337 Warren Ave. Stirling, NJ 07980
81349	Military Specifications
81350	Joint Army - Navy Specifications
82142	Airco Speer Electronics Div. of Air Reduction Co., Inc. Grand Plaza 945 Grand Ave. Nogales, AZ 85621
91637	Dale Electronics, Inc. P. O. Box 609 Columbus, NB 68601
93490	Lab Tronics, Inc. Chicago, IL 60600
94033	La Pointe Industries, Inc. 155 W. Main St. Rockville, CT 06066
94375	Automatic Metal Products Corp. 400 Moreland Rd. Commack, LI, NY 11725
96906	Military Standards

6.1.6 Configuration Identifiers

The following CI's were used in compiling data for this manual:

CI	UNIT PART NUMBER	FIG-ITEM
72433	522-2375-000	1
72114	547-3687-006	1-5
72033	547-3706-000	2
65013	547-3696-003	2-1
70503	547-3702-000	2-23
73073	547-3694-000	3
70503	547-3667-003	3-2
72206	547-3671-003	3-35
72445	547-3705-000	4
72445	547-3704-000	5

HOW TO USE THIS PARTS LIST



1. FIND PAGE NO. IN LIST OF ILLUSTRATIONS

2. FIND PART AND ITS ITEM NO.

3. LOCATE ITEM NO. ON GROUP ASSEMBLY PART LIST

4. LOCATE REFERENCE DESIGNATION

5. FIND PART NO. IN NUMERICAL INDEX

6. TURN TO FIGURE AND ITEM NO.

7. LOCATE PART ON ILLUSTRATION

HOW TO FIND THE PART NUMBER IF THE SECTION OR SYSTEM OF THE EQUIPMENT IN WHICH THE PART IS USED IS KNOWN:

(1) Refer to the List of Illustrations and find the page number for the Major Assembly or System in which the part is used.

(2) Locate the part item number and/or reference designation on the illustration.

(3) Find the item number on the Group Assembly Parts List page to determine complete description.

(4) If only the reference designation is known, refer to the Reference Designation Index to find the part number.

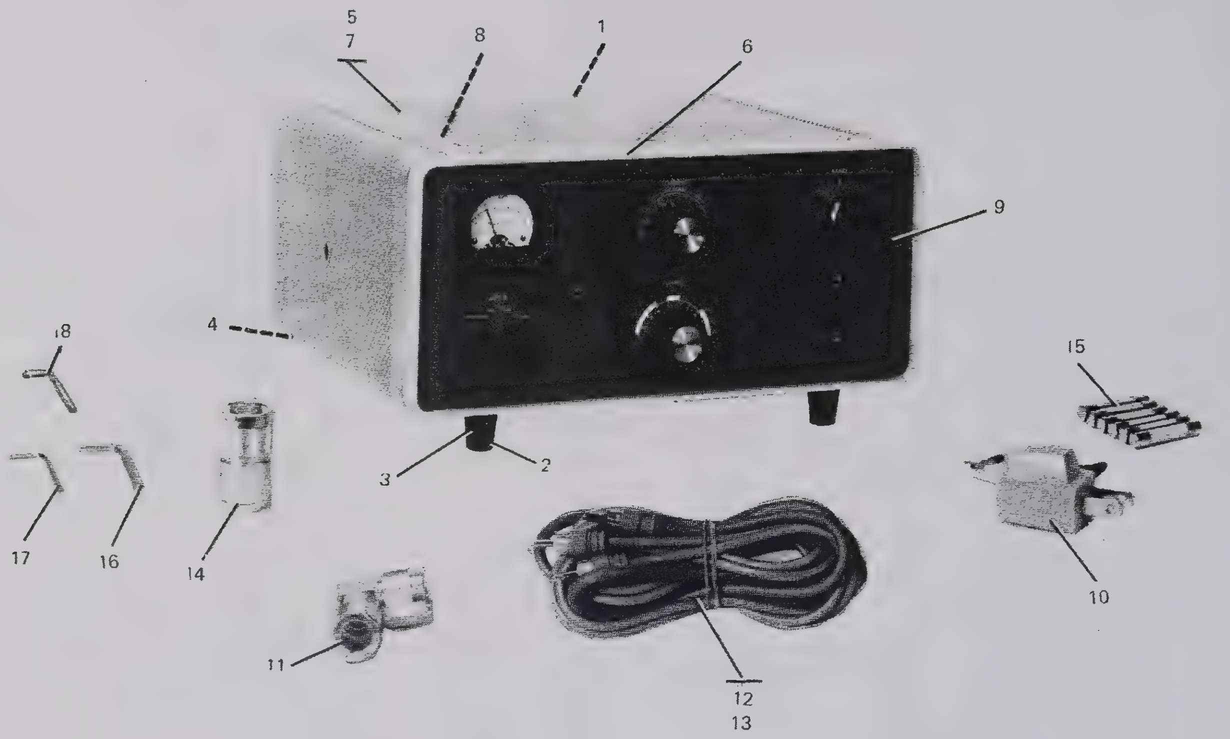
HOW TO FIND THE ILLUSTRATION FOR A PART IF THE PART NUMBER IS KNOWN:

(5) Refer to the Numerical Index and find the part number.

(6) Turn to the Group Assembly Parts List and find the first figure and item number indicated in the Numerical Index for that part. If this figure shows the part in a section or system of the equipment other than the one desired, refer to the other figure numbers listed in the Numerical Index.

(7) On the illustration, find item number determined in step (6).

6.2 GROUP ASSEMBLY PARTS LIST

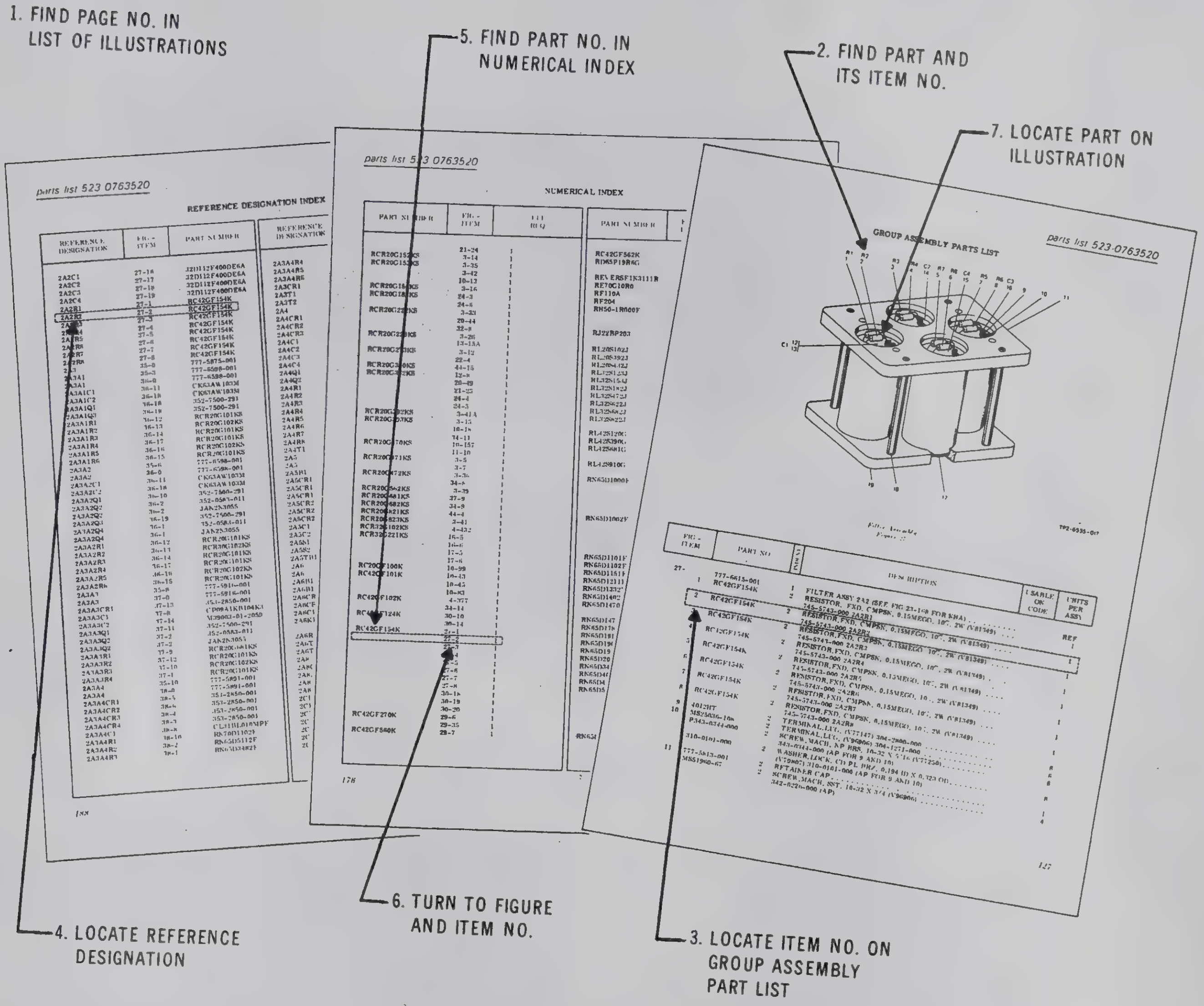


TP3-5349-017

30L-1 RF Linear Amplifier
Figure 6-1

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-1 -	522-2375-000	1	AMPLIFIER, RF LINEAR 30L-1		1
1	757-4787-000	2	PLATE, IDENT		1
2	747RBLACK	2	BUMPER,RBR (V75543) 200-5010-000		2
3	543-8101-002	2	FOOT, CABINET		2
4	548-1379-002	2	FOOT, CHASSIS		2
5	547-3687-006	2	CABINET, ELECTRICAL EQUIPMENT		1
6	547-3686-006	3	FRAME (REPLACE WITH 609-0573-001)		1
6	609-0573-001	3	FRAME		1
	503-2604-001	3	WASHER (AP)		2
	543-8116-000	3	SCREW (AP)		2
7	547-3682-006	3	CABINET		1
8	280-3013-000	2	LABEL (VA0473) 280-3013-000		1
9	547-3706-000	2	CHASSIS, ELECTRICAL EQUIPMENT (SEE FIG 2)		1
10	350	2	ADAPTER,CONN (V08556) 368-0138-000		1
11	RF0235	2	CONNECTOR,PLUG, ELEC (V94375) 357-9113-000		1
12	426-2027-000	2	CABLE ASSY (V12127) 426-2027-000		2
13	C58G08-48	2	CABLE ASSY,RF (V93490) 426-5076-000		1
14	M39012-01-0002	2	CONNECTOR,PLUG, ELEC (V81349) 357-9261-000		1
15	314008	2	FUSE,CRTG (V75915) 264-4110-000		6
16	SC76-4	2	KEY,SCH SCR (V08664) 024-9730-000		1
17	SC96CADPL	2	KEY,SKT SCR (V08664) 024-0019-000		1
18	SO72CDPL	2	KEY,SKT SCR (V08664) 024-0167-000		1

HOW TO USE THIS PARTS LIST


1. FIND PAGE NO. IN LIST OF ILLUSTRATIONS
5. FIND PART NO. IN NUMERICAL INDEX
2. FIND PART AND ITS ITEM NO.
7. LOCATE PART ON ILLUSTRATION
parts list 523 0763520
REFERENCE DESIGNATION INDEX
NUMERICAL INDEX
GROUP ASSEMBLY PARTS LIST
4. LOCATE REFERENCE DESIGNATION
6. TURN TO FIGURE AND ITEM NO.
3. LOCATE ITEM NO. ON GROUP ASSEMBLY PART LIST

HOW TO FIND THE PART NUMBER IF THE SECTION OR SYSTEM OF THE EQUIPMENT IN WHICH THE PART IS USED IS KNOWN:

(1) Refer to the List of Illustrations and find the page number for the Major Assembly or System in which the part is used.

(2) Locate the part item number and/or reference designation on the illustration.

(3) Find the item number on the Group Assembly Parts List page to determine complete description.

(4) If only the reference designation is known, refer to the Reference Designation Index to find the part number.

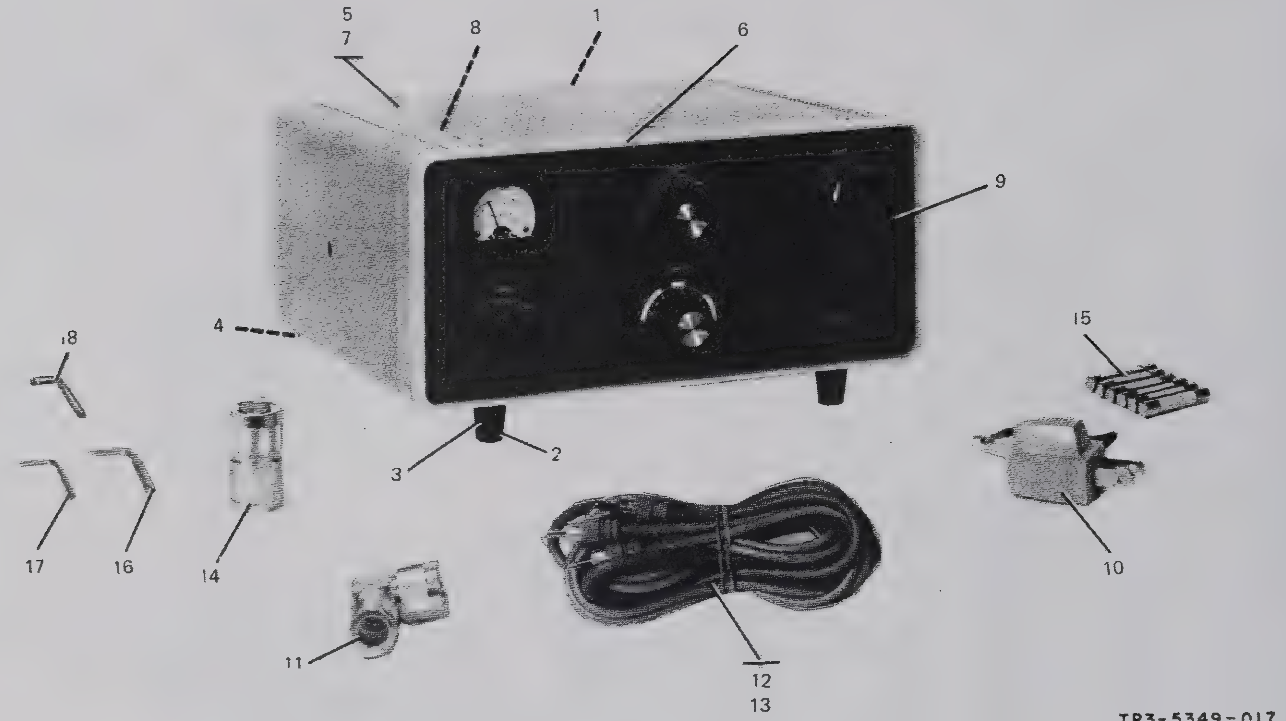
HOW TO FIND THE ILLUSTRATION FOR A PART IF THE PART NUMBER IS KNOWN:

(5) Refer to the Numerical Index and find the part number.

(6) Turn to the Group Assembly Parts List and find the first figure and item number indicated in the Numerical Index for that part. If this figure shows the part in a section or system of the equipment other than the one desired, refer to the other figure numbers listed in the Numerical Index.

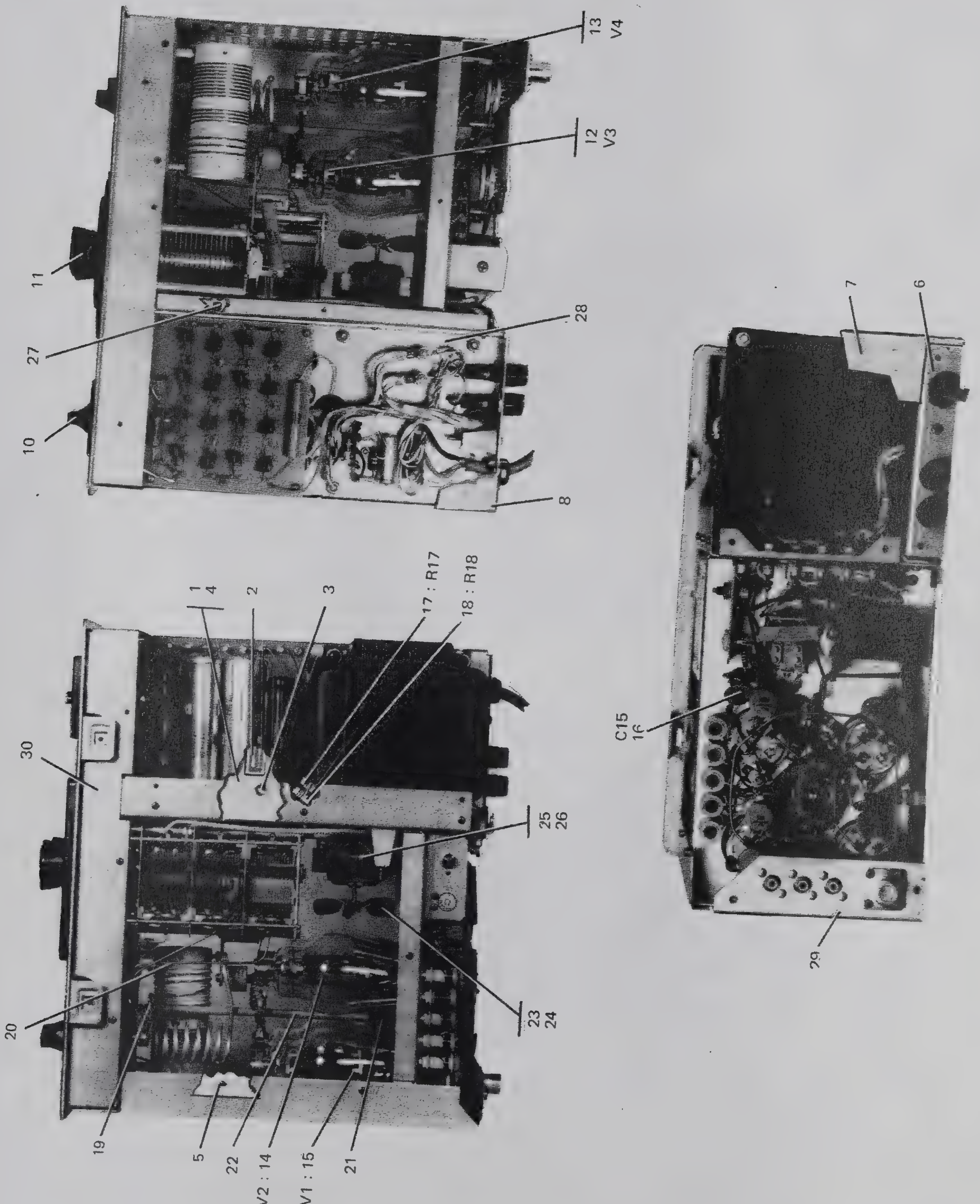
(7) On the illustration, find item number determined in step (6).

6.2 GROUP ASSEMBLY PARTS LIST



30L-1 RF Linear Amplifier
Figure 6-1

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-1 -	522-2375-000	1	AMPLIFIER, RF LINEAR 30L-1		1
1	757-4787-000	2	PLATE, IDENT		1
2	747RBLACK	2	BUMPER,RBR (V75543) 200-5010-000		2
3	543-8101-002	2	FOOT, CABINET		2
4	548-1379-002	2	FOOT, CHASSIS		2
5	547-3687-006	2	CABINET, ELECTRICAL EQUIPMENT		1
6	547-3686-006	3	FRAME (REPLACE WITH 609-0573-001)		1
6	609-0573-001	3	FRAME		1
	503-2604-001	3	WASHER (AP)		2
	543-8116-000	3	SCREW (AP)		2
7	547-3682-006	3	CABINET		1
8	280-3013-000	2	LABEL (VA0473) 280-3013-000		1
9	547-3706-000	2	CHASSIS, ELECTRICAL EQUIPMENT (SEE FIG 2)		1
10	350	2	ADAPTER,CONN (V08556) 368-0138-000		1
11	RF0235	2	CONNECTOR,PLUG, ELEC (V94375) 357-9113-000		1
12	426-2027-000	2	CABLE ASSY (V12127) 426-2027-000		2
13	C58G08-48	2	CABLE ASSY,RF (V93490) 426-5076-000		1
14	M39012-01-0002	2	CONNECTOR,PLUG, ELEC (V81349) 357-9261-000		1
15	314008	2	FUSE,CRTG (V75915) 264-4110-000		6
16	SC76-4	2	KEY,SCH SCR (V08664) 024-9730-000		1
17	SC96CADPL	2	KEY,SKT SCR (V08664) 024-0019-000		1
18	S072CDPL	2	KEY,SKT SCR (V08664) 024-0167-000		1



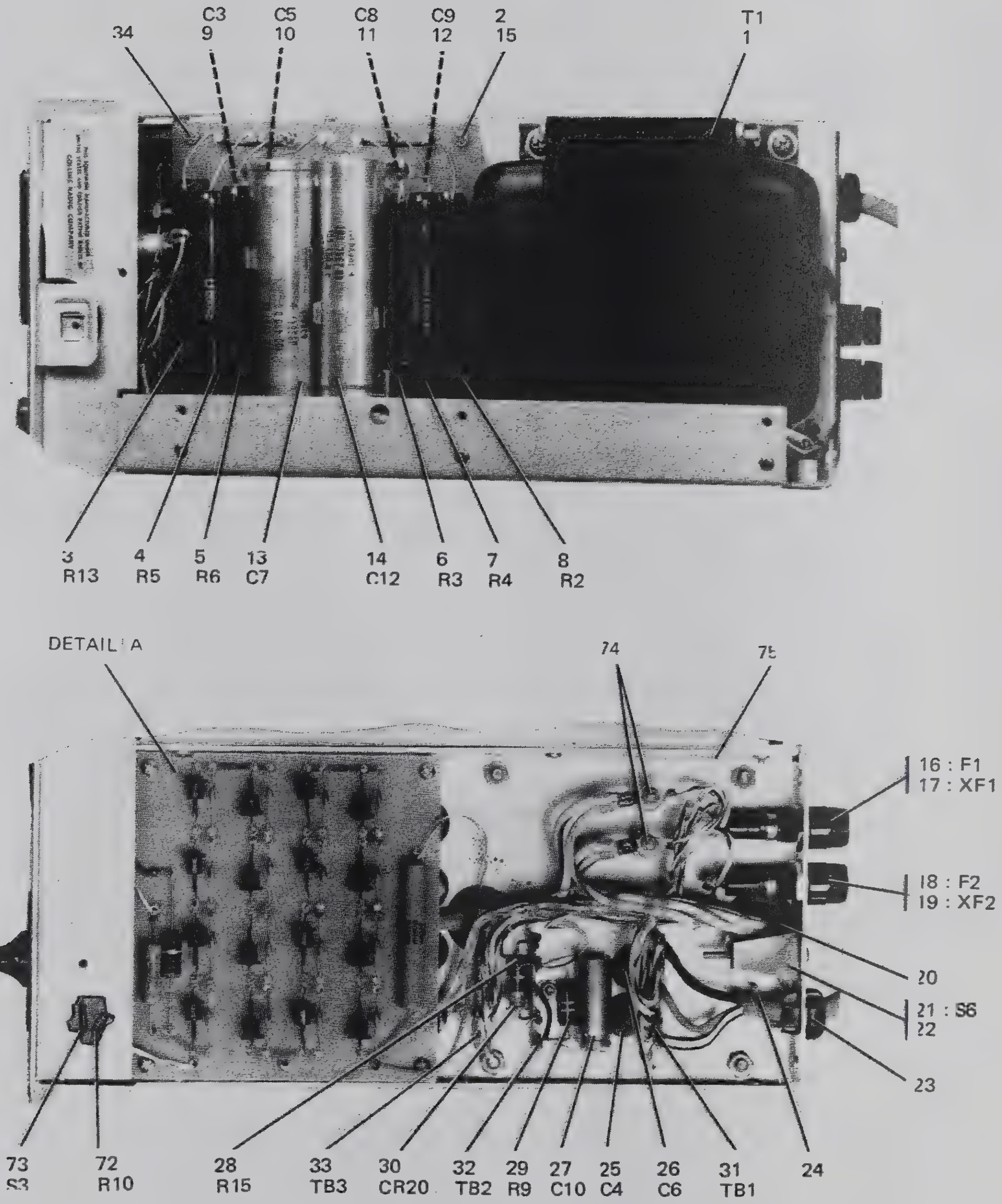
TP3-5350-017

Electrical Equipment Chassis
Figure 6-2

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2 -	547-3706-000	1	CHASSIS, ELECTRICAL EQUIPMENT (SEE FIG 1-9 FOR NHA)		RF
1	547-3696-003	2	COVER, POWER SUPPLY		1
2	280-0851-000	3	DECAL,LABEL (V74048) 280-0851-CC0		1
3	547-3633-002	3	ACTUATOR, INTERLOCK		1
4	547-3695-003	3	COVER		1
5	547-3690-004	2	COVER, AMPLIFIER		1
6	547-3647-004	2	PLATE, REAR		1
7	547-3699-003	2	PLATE, POWER SUPPLY		1
8	547-3649-004	2	COVER, BOTTOM		1
9	547-3634-002	3	ACTUATOR, INTERLOCK		1
1C	544-0779-004	2	KNOB		2
11	547-3656-002	2	KNOB		2
12	811A	2	ELECTRON TUBE (V49671) 256-C053-CC0 V3		1
13	811A	2	ELECTRON TUBE (V49671) 256-C053-0C0 V4		1
14	811A	2	ELECTRON TUBE (V49671) 256-0053-CCC V2		1
15	811A	2	ELECTRON TUBE (V49671) 256-0053-CC0 V1		1
16	36C175A	2	CAPACITOR,FXD, CER DIEL, 1CC00PF, 20%, 500V (V56289) 913-3013-000 C15		1
17	RCR42G100KS	2	RESISTOR,FXD, CMPSN, 10 OHMS, 1C%, 2W (V81349) 745-5568-0CC R17		1
18	RCR42G100KS	2	RESISTOR,FXC, CMPSN, 10 OHMS, 10%, 2W (V81349) 745-5568-0CC R18		1
19	547-3639-002	2	LINK, RIGID CONNECTING		1
2C	549-5C84-002	2	LEVER ASSY, SWITCH		1
21	39003	2	COUPLING,SHAFT (V76487) 015-0257-CC0		1
22	547-3657-002	2	SHAFT, BANDSWITCH		1
23	547-3702-000	2	FAN, AXIAL		1
24	YAB355-2	3	PROPELLER,FAN (V05624) 009-1471-CCC		1
25	547-3631-002	3	PLATE, MTG		1
26	11647	3	MOTOR,DC (VC5624) 230-0375-C0C B1		1
27	1126	2	STRAP,RETAINING (V71785) 139-0311-C00		1
28	547-3694-000	2	POWER SUPPLY (SEE FIG 3)		1
29	547-3705-000	2	AMPLIFIER SUBASSEMBLY (SEE FIG 4)		1
30	547-3704-000	2	PANEL ASSEMBLY, FRONT (SEE FIG 5)		1
6-3 -	547-3694-000	1	POWER SUPPLY (SEE FIG 2-28 FOR NHA)		RF
1	E13648	2	TRANSFORMER,PWR (V80008) 662-0C10-000 T1		1
2	547-3667-C03	2	POWER SUPPLY SUBASSEMBLY, CAPACITOR BOARD		1
3	CM28047	3	RESISTOR,FXD,WW 25K, 5%, 26W (V12697) 746-9155-0CC R13		1
4	CM28047	3	RESISTOR,FXC,WW 25K, 5%, 26W (V12697) 746-9155-0CC R5		1
5	CM28047	3	RESISTOR,FXD,WW 25K, 5%, 26W (V12697) 746-9155-0CC R6		1
6	CM28047	3	RESISTOR,FXC,WW 25K, 5%, 26W (V12697) 746-9155-0CC R3		1
7	CM28047	3	RESISTOR,FXC,WW 25K, 5%, 26W (V12697) 746-9155-0CC R4		1
8	CM28047	3	RESISTOR,FXD,WW 25K, 5%, 26W (V12697) 746-9155-0CC R2		1
9	D33647	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C3		1
10	D33647	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C5		1

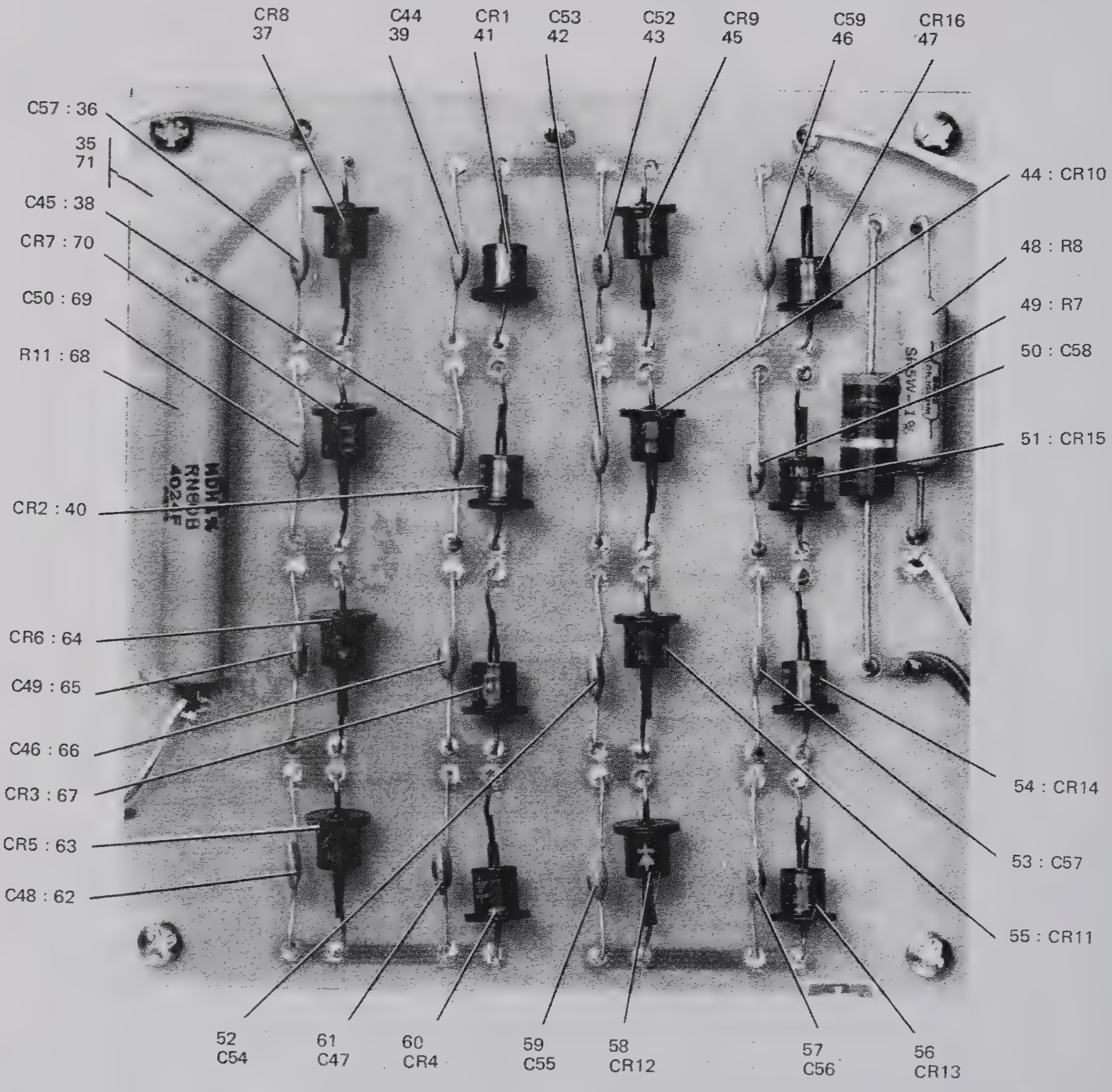
GROUP ASSEMBLY PARTS LIST



TP3-5353-027

Power Supply
Figure 6-3 (Sheet 1 of 2)

GROUP ASSEMBLY PARTS LIST



Power Supply
Figure 6-3 (Sheet 2)

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 11	D33647	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C8		1
12	D33647	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C9		1
13	D33647	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C7		1
14	D33647.	3	CAPACITOR,FXD, ELCTLT, 100UF, M10%P100%, 450V (V56289) 183-1567-000 C12		1
15	547-3666-003	3	TERMINAL BOARD		1
16	314008	2	FUSE,CRTG (V75915) 264-4110-000 F1		1
17	HKPHJRZZ	2	FUSEHOLDER (V71400) 265-1019-000 XF1		1
18	314008	2	FUSE,CRTG (V75915) 264-4110-000 F2		1
19	HKPHJRZZ	2	FUSEHOLDER (V71400) 265-1019-000 XF2		1
20	MS35489-16	2	GROMMET,RBR (V96906) 201-0007-000		2
21	547-3632-002	2	CONTACT, INTERLOCK S6		1
22	GS10	2	INSULATOR,STDF (V81143) 190-2570-000		1
23	SR6P4	2	BUSHING,STRAIN (V28520) 150-0050-000		1
24	0220-17	2	CABLE ASSY,PWR (V71700) 426-1466-000		1
25	2DDH63N103M	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 1000V (V71590) 913-3922-000 C4		1
26	2DDH63N103M	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 1000V (V71590) 913-3922-000 C6		1
27	D34441	2	CAPACITOR,FXD, ELCTLT, 10UF, M10%P100%, 250V (V56289) 183-1563-000 C10		1
28	RCR42G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 2W (V81349) 745-5694-000 R15		1
29	RCR42G470KS	2	RESISTOR,FXD, CMPSN, 47 OHMS, 10%, 2W (V81349) 745-5596-000 R9		1
30	1N540	2	SEMICOND DEVICE (V07688) 353-1546-000 CR20 (REPLACE WITH 353-6442-050)		1
30	1N4005	2	SEMICOND DEVICE (V04713) 353-6442-050 CR20		1
31	1542A	2	TERMINAL BOARD (V71785) 306-0550-000 TB1		1
32	1542A	2	TERMINAL BOARD (V71785) 306-0550-000 TB2		1
33	1909	2	TERMINAL BOARD (V71785) 306-0838-000 TB3		1
34	540-9230-003	2	POST, ELECTRICAL-MECHANICAL EQUIPMENT		4
35	547-3671-003	2	POWER SUPPLY SUBASSEMBLY, DIODE BOARD		1
	541-6008-002	2	SPACER, SLEEVE (AP FOR 34-35)		4
36	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C51		1
37	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR8 (REPLACE WITH 353-6442-050)		1
37	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR8		1
38	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C45		1
39	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C44		1
40	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR2 (REPLACE WITH 353-6442-050)		1
40	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR2		1
41	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR1 (REPLACE WITH 353-6442-050)		1
41	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR1		1
42	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C53		1
43	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C52		1
44	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR10 (REPLACE WITH 353-6442-050)		1
44	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR10		1
45	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR9 (REPLACE WITH 353-6442-050)		1
45	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR9		1

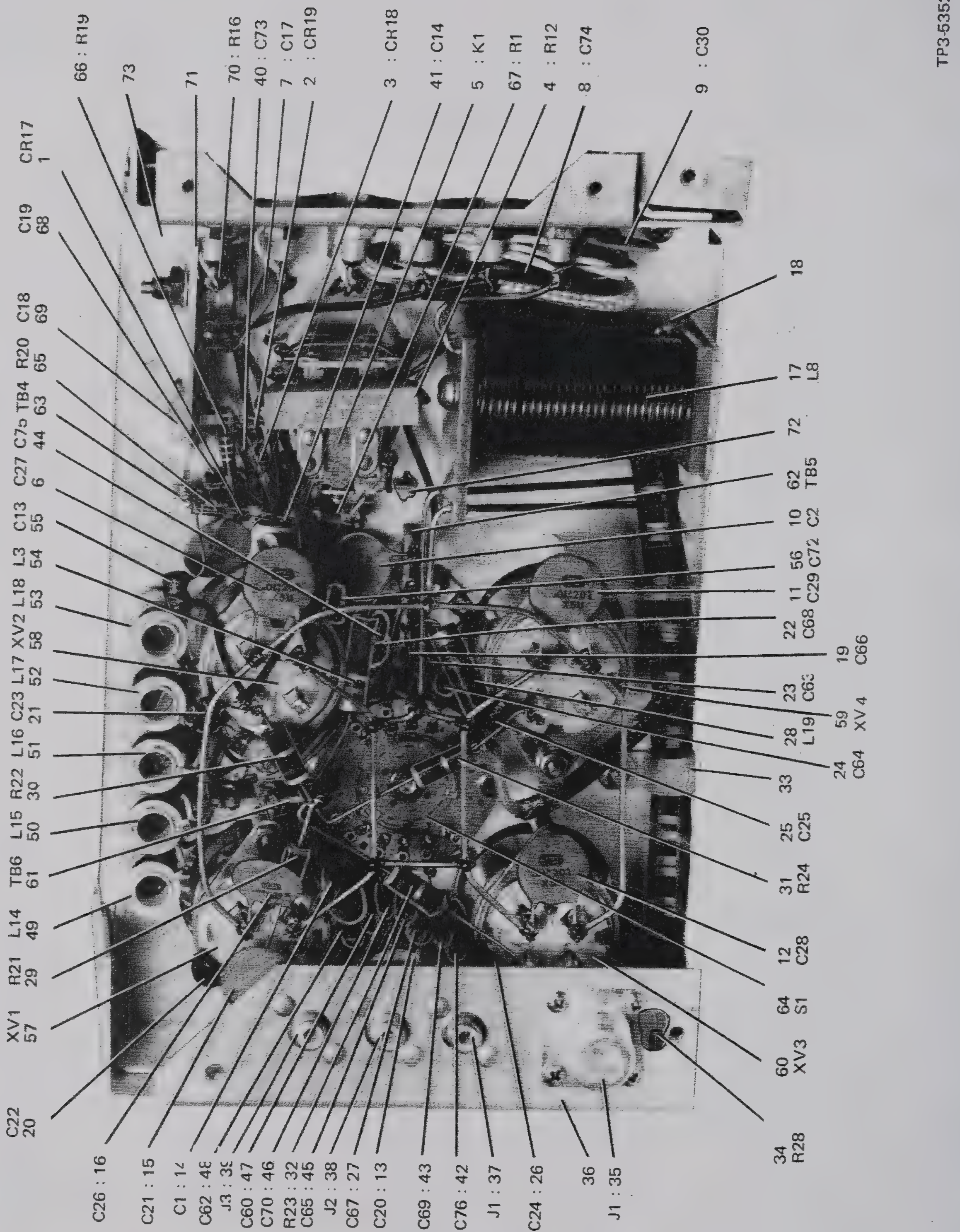
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 46	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C59		1
47	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR16 (REPLACE WITH 353-6442-050)		1
47	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR16		1
48	RS5-41-1F	3	RESISTOR,FXD,WW 1 OHM, 1%, 5W (V91637) 747-9716-000 R8		1
49	RCR42G152KS	3	RESISTOR,FXD, CMPSN, 1.5K, 10%, 2W (V81349) 745-5659-000 R7		1
50	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C58		1
51	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR15 (REPLACE WITH 353-6442-050)		1
51	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR15		1
52	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C54		1
53	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C57		1
54	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR14 (REPLACE WITH 353-6442-050)		1
54	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR14		1
55	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR11 (REPLACE WITH 353-6442-050)		1
55	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR11		1
56	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR13 (REPLACE WITH 353-6442-050)		1
56	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR13		1
57	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C56		1
58	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR12 (REPLACE WITH 353-6442-050)		1
58	1N4005	3	SEMICOND DEVICE, (V04713) 353-6442-050 CR12		1
59	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C55		1
60	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR4 (REPLACE WITH 353-6442-050)		1
60	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR4		1
61	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C47		1
62	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C48		1
63	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR5 (REPLACE WITH 353-6442-050)		1
63	1N4005	3	SEMICOND DEVICE, (V04713) 353-6442-050 CR5		1
64	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR6 (REPLACE WITH 353-6442-050)		1
64	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR6		1
65	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C49		1
66	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C46		1
67	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR3 (REPLACE WITH 353-6442-050)		1
67	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR3		1
68	RN80B4024F	3	RESISTOR,FXD, FILM, 4.02MEGO, 1%, 2W (V81349) 705-4260-000 R11		1
69	40C73A1	3	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 500V (V56289) 913-3009-000 C50		1
70	1N1492	3	SEMICOND DEVICE (V07688) 353-1661-000 CR7 (REPLACE WITH 353-6442-050)		1
70	1N4005	3	SEMICOND DEVICE (V04713) 353-6442-050 CR7		1
71	547-3670-003	3	BOARD, PRINTED CIRCUIT		1
71	547-3693-000	2	WIRING HARNESS, BRANCHED		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 72	RN65D1781F	3	RESISTOR,FXD, FILM, 1.78K, 1%, 1/2W (V81349) 705-7108-000 R10		1
73	215870F1	3	SWITCH,RTRY (V76854) 259-1368-000 S3		1
74	C1700	2	INSULATOR,STDF (V70371) 190-1141-000		2
75	547-3651-005	2	CHASSIS, ELECTRICAL EQUIPMENT		1
6-4 -	547-3705-000	1	AMPLIFIER SUBASSEMBLY (SEE FIG 2-29 FOR NHA)		RF
1	1N458	2	SEMICOND DEVICE (V07688) 353-0205-000 CR17 (REPLACE WITH 353-3024-000)		1
1	FD100	2	SEMICOND DEVICE (V07263) 353-3024-000 CR17		1
2	1N458	2	SEMICOND DEVICE (V07688) 353-0205-000 CR19 (REPLACE WITH 353-3024-000)		1
2	FD100	2	SEMICOND DEVICE (V07263) 353-3024-000 CR19		1
3	1N458	2	SEMICOND DEVICE (V07688) 353-0205-000 CR18 (REPLACE WITH 353-3024-000)		1
3	FD100	2	SEMICOND DEVICE (V07263) 353-3024-000 CR18		1
4	PW7-2000-10PCT	2	RESISTOR,FXD,WW 2K, 10%, 7W (V07716) 710-9010-000 R12		1
5	KR2916	2	RELAY,AMT (V77342) 970-2140-000 K1		1
6	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C27		1
7	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C17		1
8	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C74		1
9	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C30		1
10	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C2		1
11	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C29		1
12	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C28		1
13	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C20		1
14	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C1		1
15	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C21		1
16	36C175A	2	CAPACITOR,FXD, CER DIEL, 10000PF, 20%, 500V (V56289) 913-3013-000 C26		1
17	18-401	2	COIL,RF, 7.5UH (V09250) 240-1244-000 L8		1
18	547-3641-002	2	BRACKET, COIL ANGLE		1
19	CM05FD331J03	2	CAPACITOR,FXD, MICA DIEL, 330PF, 5%, 500V (V81349) 912-2852-000 C66		1
20	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C22		1
21	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C23		1
22	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C68		1
23	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C63		1
24	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C64		1

GROUP ASSEMBLY PARTS LIST



Amplifier Subassembly
Figure 6-4

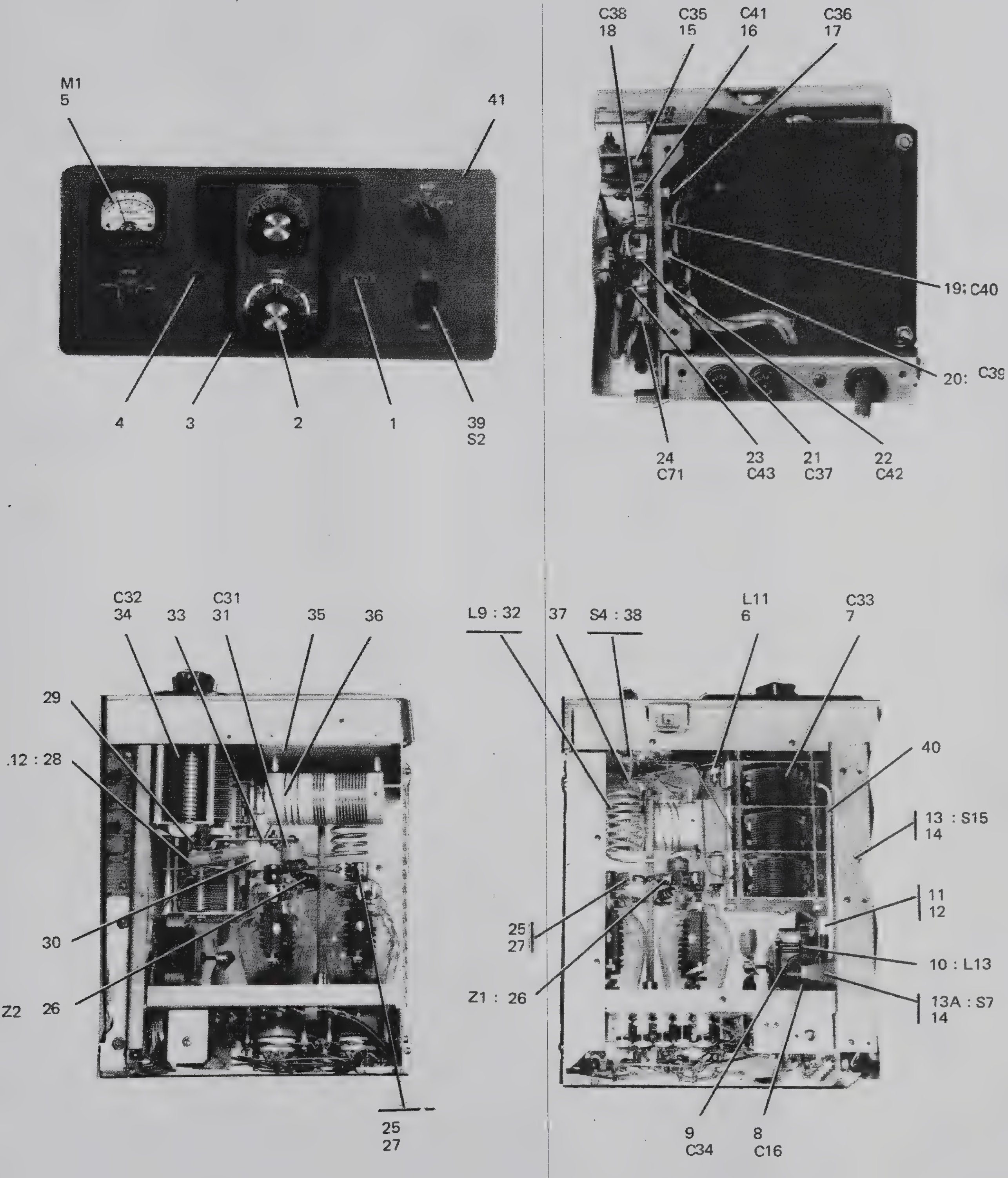
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-4 25	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C25		1
26	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C24		1
27	CM05FD221J03	2	CAPACITOR,FXD, MICA DIEL, 220PF, 5%, 500V (V81349) 912-2840-000 C67		1
28	240-0173-000	2	COIL,RF, 1.5UH (V82142) 240-0173-000 L19		1
29	RCR32G470KS	2	RESISTOR,FXD, CMPSN, 47 OHMS, 10%, 1W (V81349) 745-3296-000 R21		1
30	RCR32G470KS	2	RESISTOR,FXD, CMPSN, 47 OHMS, 10%, 1W (V81349) 745-3296-000 R22		1
31	RCR32G470KS	2	RESISTOR,FXD, CMPSN, 47 OHMS, 10%, 1W (V81349) 745-3296-000 R24		1
32	RCR32G470KS	2	RESISTOR,FXD, CMPSN, 47 OHMS, 10%, 1W (V81349) 745-3296-000 R23		1
33	HF6N	2	CLAMP,LOOP (V09922) 150-1543-000		1
34	RCR20G390KS	2	RESISTOR,FXD, CMPSN, 39 OHMS, 10%, 1/2W (V81349) 745-1293-000 R28 (REPLACE WITH 745-5593-000)		1
34	RCR42G390KS	2	RESISTOR,FXD, CMPSN, 39 OHMS, 5%, 2W (V81349) 745-5593-000 R28		1
35	M39012-04-0002	2	CONNECTOR,RCPT, ELEC (V81349) 357-9003-000 J4		1
36	547-3664-003	2	BRACKET, CONNECTOR		1
37	201-11-01-018	3	JACK,PHONO (V71785) 360-0088-000 J1		1
38	201-11-01-018	3	JACK,PHONO (V71785) 360-0088-000 J2		1
39	201-11-01-018	3	JACK,PHONO (V71785) 360-0088-000 J3		1
40	CM05FD101J03	2	CAPACITOR,FXD, MICA DIEL, 100PF, 5%, 500V (V81349) 912-2816-000 C73		1
41	CM05FD101J03	2	CAPACITOR,FXD, MICA DIEL, 100PF, 5%, 500V (V81349) 912-2816-000 C14		1
42	CM05FD101J03	2	CAPACITOR,FXD, MICA DIEL, 100PF, 5%, 500V (V81349) 912-2816-000 C76		1
43	CM05FD151J03	2	CAPACITOR,FXD, MICA DIEL, 150PF, 5%, 500V (V81349) 912-2828-000 C69		1
44	CM05FD151J03	2	CAPACITOR,FXD, MICA DIEL, 150PF, 5%, 500V (V81349) 912-2828-000 C75		1
45	CM05FD181J03	2	CAPACITOR,FXD, MICA DIEL, 180PF, 5%, 500V (V81349) 912-2834-000 C65		1
46	CM05FD181J03	2	CAPACITOR,FXD, MICA DIEL, 180PF, 5%, 500V (V81349) 912-2834-000 C70		1
47	CM05ED820J03	2	CAPACITOR,FXD, MICA DIEL, 82PF, 5%, 500V (V81349) 912-2810-000 C60		1
48	CM15F511J300WV4CR	2	CAPACITOR,FXD, MICA DIEL, 510PF, 5%, 500V (V72136) 912-2867-000 C62		1
49	547-3659-003	2	COIL, RF L14		1
50	547-3660-003	2	COIL, RF L15		1
51	547-3661-003	2	COIL, RF L16		1
52	547-3662-003	2	COIL, RF L17		1
53	547-3663-003	2	COIL, RF L18		1
54	240-0189-000	2	COIL,RF, 39UH (V82142) 240-0189-000 L3 (REPLACE WITH 240-0186-000)		1
54	240-0186-000	2	COIL,RF, 22UH (V82142) 240-0186-000 L3		1
55	CM05ED470J03	2	CAPACITOR,FXD, MICA DIEL, 47PF, 5%, 500V (V81349) 912-2792-000 C13		1
56	CM05ED470J03	2	CAPACITOR,FXD, MICA DIEL, 47PF, 5%, 500V (V81349) 912-2792-000 C72 (REPLACE WITH 912-2774-000)		1
56	CM05ED270J03	2	CAPACITOR,FXD, MICA DIEL, 27PF, 5%, 500V (V81349) 912-2774-000 C72		1
57	49RSS4	2	SOCKET,ELECTRON (V02660) 220-1451-000 XV1		1
58	49RSS4	2	SOCKET,ELECTRON (V02660) 220-1451-000 XV2		1
59	49RSS4	2	SOCKET,ELECTRON (V02660) 220-1451-000 XV4		1
60	49RSS4	2	SOCKET,ELECTRON (V02660) 220-1451-000 XV3		1
	500-0053-001	2	SPACER (AP FOR 57-60)		8

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-4 61	1520A	2	TERMINAL BOARD (V71785) 306-9033-000 TB6		1
62	1520A	2	TERMINAL BOARD (V71785) 306-9033-000 TB5		1
63	1542A	2	TERMINAL BOARD (V71785) 306-0550-000 TB4		1
64	214093LK1	2	SWITCH,RTRY (V76854) 259-1385-000 S1		1
65	RCR20G393KS	2	RESISTOR,FXD, CMPSN, 39K, 10%, 1/2W (V81349) 745-1419-000 R20		1
66	RCR20G393KS	2	RESISTOR,FXD, CMPSN, 39K, 10%, 1/2W (V81349) 745-1419-000 R19		1
67	RCR20G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/2W (V81349) 745-1380-000 R1		1
68	CM05FD271J03	2	CAPACITOR,FXD, MICA DIEL, 270PF, 5%, 500V (V81349) 912-2846-000 C19		1
69	557006U2P034R	2	CAPACITOR,VAR, 8 TO 50PF, 350V (V72982) 917-1196-000 C18		1
70	376-0205-000	2	RESISTOR,VAR, 5K, 20%, 1/5W 376-0205-000 R16		1
71	547-3642-003	2	BRACKET, ANGLE		1
72	280-2979-000	2	LABEL 280-2979-000		1
73	547-3653-005	2	CHASSIS, ELECTRICAL EQUIPMENT		1
6-5 -	547-3704-000	1	PANEL ASSY, FRONT (SEE FIG 2-30 FOR NHA)		RF
1	547-3720-003	2	PLATE, IDENT		1
2	547-3672-003	2	PLATE, FRONT ESCUTCHEON		1
3	547-3658-003	2	PLATE, REAR ESCUTCHEON		1
4	280-2972-000	2	INSIGNIA 280-2972-000 (REPLACE WITH 280-3423-000)		1
4	280-3423-00	2	INSIGNIA (VA1334) 280-3423-000		1
5	458-0592-00	2	METER,ELEC (V03562) 458-0592-000 M1		1
6	34103	2	COIL,RF, 2.5MH (V76487) 240-0059-000 L11		1
7	921-0018-000	2	CAPACITOR,VAR (V94033) 921-0018-000 C33		1
	541-6056-002	2	SPACER (AP)		4
8	DA172-062CB	2	CAPACITOR,FXD, CER DIEL, 5000PF, 20%, 3000V (V71590) 913-4329-000 C16		1
9	DA172-062CB	2	CAPACITOR,FXD, CER DIEL, 5000PF, 20%, 3000V (V71590) 913-4329-000 C34		1
10	240-0174-000	2	COIL,RF, 2.2UH (V82142) 240-0174-000 L13		1
11	X87	2	INSULATOR,BSHG (V71590) 190-1122-000		1
12	X86	2	INSULATOR,BSHG (V71590) 190-1126-000		1
13	547-3632-002	2	CONTACT, INTERLOCK S5		1
13A	547-3632-002	2	CONTACT, INTERLOCK S7		1
14	GS10	2	INSULATOR,STDF (V81143) 190-2570-000		2
15	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C35		1
16	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C41		1
17	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C36		1
18	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C37		1
19	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C40		1
20	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C39		1
21	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C38		1
22	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C42		1

GROUP ASSEMBLY PARTS LIST



TP3-5351-017

Front Panel Assembly
Figure 6-5

GROUP ASSEMBLY PARTS LIST

FIG - ITEM		PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-5	23	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C43		1
	24	327-029X5T0102Z	2	CAPACITOR,FXD, CER DIEL, 1000PF, M20%P80%, 500V (V72982) 913-1292-000 C71		1
	25	547-3707-002	2	LEAD ASSY, SUPPRESSOR		
	26	547-3654-002	3	SUPPRESSOR PARASITIC Z1 ,Z2		2
	27	GG12-2	3	CLIP,ELEC (V07886) 301-1001-000		1
	28	Z14	2	COIL,RF, 44UH (V44655) 240-0807-000 L12		2
	29	NS5W0206	2	INSULATOR,STDF (V81350) 190-0017-000		1
	30	E1000	2	INSULATOR,STDF (V70371) 190-1150-000		1
	31	DA858-003	2	CAPACITOR,FXD, CER DIEL, 1000PF, 20%, 5000V (V71590) 913-0101-000 C31		1 1
	32	547-3718-002	2	COIL, RF L9		
	33	547-3712-002	2	BRACKET, MOUNTING		1
	34	154-2	2	CAPACITOR,VAR, AIR DIEL, 20 TO 335.4PF (V74970) 920-0066-000 C32		1 1
		541-6003-002	2	SPACER (AP)		
	35	547-3701-003	2	BRACKET, COIL		3
		541-6029-002	2	SPACER (AP)		1
	36	547-3708-003	2	COIL, RF L10		2
	37	549-5084-002	2	LEVEL ASSY, SWITCH		1
	38	PA230-1005	2	SWITCH,RTRY (V71590) 259-1386-000 S4		1
	39	C811-113010109	2	SWITCH,PUSH (V39317) 266-6020-000 S2		1
	40	547-3703-000	2	HARNESS, WIRING		1
	41	547-3692-000	2	PANEL, FRONT		1
						1

6.3 NUMERICAL INDEX

PART NUMBER	FIG - ITEM	TTL REQ
CM05ED270J03	6-4-56	1
CM05ED470J03	6-4-55	1
	6-4-56	1
CM05ED820J03	6-4-47	1
CM05FD101J03	6-4-40	1
	6-4-41	1
	6-4-42	1
CM05FD151J03	6-4-43	1
	6-4-44	1
CM05FD181J03	6-4-45	1
	6-4-46	1
CM05FD221J03	6-4-20	1
	6-4-21	1
	6-4-22	1
	6-4-23	1
	6-4-24	1
	6-4-25	1
	6-4-26	1
	6-4-27	1
CM05FD271J03	6-4-68	1
CM05FD331J03	6-4-19	1
CM28C47	6-3-3	1
	6-3-4	1
	6-3-5	1
	6-3-6	1
	6-3-7	1
	6-3-8	1
C58G08-48	6-1-13	1
CA172-062C8	6-5-8	1
	6-5-9	1
CA858-003	6-5-31	1
CM15F511J300WV4C R	6-4-48	1
D33647	6-3-9	1
	6-3-10	1
	6-3-11	1
	6-3-12	1
	6-3-13	1
	6-3-14	1
D34441	6-3-27	1
E100C	6-5-30	1
E13648	6-3-1	1
E170C	6-3-74	2
FD10C	6-4-1	1
	6-4-2	1
	6-4-3	1
GG12-2	6-5-27	2
GS10	6-3-22	1
	6-5-14	2
HKPHJRZZ	6-3-17	1
	6-3-19	1
HP6N	6-4-33	1
KR2916	6-4-5	1
MS35489-16	6-3-20	2
M39012-01-0002	6-1-14	1
M39012-04-0002	6-4-35	1
NS5W0206	6-5-29	1
PA23C-1005	6-5-38	1
PW7-2000-10PCT	6-4-4	1
RCR20G390KS	6-4-34	1
RCR20G393KS	6-4-65	1
	6-4-66	1
RCR20G472KS	6-4-67	1

PART NUMBER	FIG - ITEM	TTL REQ
RCR32G470KS	6-4-29	1
	6-4-30	1
	6-4-31	1
	6-4-32	1
RCR42G100KS	6-2-17	1
	6-2-18	1
RCR42G103KS	6-3-28	1
RCR42G152KS	6-3-49	1
RCR42G390KS	6-4-34	1
RCR42G470KS	6-3-29	1
RF0235	6-1-11	1
RN65D1781F	6-3-72	1
RN80B4024F	6-3-68	1
RS5-41-1F	6-3-48	1
SR6P4	6-3-23	1
SO72CDPL	6-1-18	1
SO76-4	6-1-16	1
SO96CADPL	6-1-17	1
X86	6-5-12	1
X87	6-5-11	1
YAB355-2	6-2-24	1
Z14	6-5-28	1
0220-17	6-3-24	1
0811-113010109	6-5-39	1
1N1492	6-3-37	1
	6-3-40	1
	6-3-41	1
	6-3-44	1
	6-3-45	1
	6-3-47	1
	6-3-51	1
	6-3-54	1
	6-3-55	1
	6-3-56	1
	6-3-58	1
	6-3-60	1
	6-3-63	1
	6-3-64	1
	6-3-67	1
	6-3-70	1
1N4005	6-3-30	1
	6-3-37	1
	6-3-40	1
	6-3-41	1
	6-3-44	1
	6-3-45	1
	6-3-47	1
	6-3-51	1
	6-3-54	1
	6-3-55	1
	6-3-56	1
	6-3-58	1
	6-3-60	1
	6-3-63	1
	6-3-60	1
	6-3-64	1
	6-3-67	1
	6-3-70	1
1N458	6-4-1	1
	6-4-2	1
	6-4-3	1
1N540	6-3-30	1
1126	6-2-27	1
11647	6-2-26	1
1520A	6-4-61	1
	6-4-62	1

NUMERICAL INDEX

PART NUMBER	FIG - ITEM	TTL REQ
154-2	6-5-34	1
1542A	6-3-31	1
	6-3-32	1
	6-4-63	1
18-401	6-4-17	1
1909	6-3-33	1
2DDH63N103M	6-3-25	1
	6-3-26	1
201-11-01-018	6-4-37	1
	6-4-38	1
	6-4-39	1
214093LK1	6-4-64	1
215870F1	6-3-73	1
240-0173-000	6-4-28	1
240-0174-000	6-5-10	1
240-0186-000	6-4-54	1
240-0189-000	6-4-54	1
280-0851-000	6-2-2	1
280-2972-000	6-5-4	1
280-2979-000	6-4-72	1
280-3013-000	6-1-8	1
280-3423-00	6-5-4	1
314008	6-1-15	6
	6-3-16	1
	6-3-18	1
327-029X5T0102Z	6-5-15	1
	6-5-16	1
	6-5-17	1
	6-5-18	1
	6-5-19	1
	6-5-20	1
	6-5-21	1
	6-5-22	1
	6-5-23	1
	6-5-24	1
34103	6-5-6	1
350	6-1-10	1
360175A	6-2-16	1
	6-4-6	1
	6-4-7	1
	6-4-8	1
	6-4-9	1
	6-4-10	1
	6-4-11	1
	6-4-12	1
	6-4-13	1
	6-4-14	1
	6-4-15	1
	6-4-16	1
376-0205-000	6-4-70	1
39003	6-2-21	1
40073A1	6-3-36	1
	6-3-38	1
	6-3-39	1
	6-3-42	1
	6-3-43	1
	6-3-46	1
	6-3-50	1
	6-3-52	1
	6-3-53	1
	6-3-57	1
	6-3-59	1
	6-3-61	1
	6-3-62	1
	6-3-65	1
	6-3-66	1
	6-3-69	1
426-2027-000	6-1-12	2
458-0592-00	6-5-5	1
49RSS4	6-4-57	1
	6-4-58	1
	6-4-59	1
	6-4-60	1
500-0053-001	6-4-60	8
503-2604-001	6-1-6	2
522-2375-000	6-1-	1
540-9230-003	6-3-34	4
541-6003-002	6-5-34	3
541-6008-002	6-3-35	4
541-6029-002	6-5-35	2
541-6056-002	6-5-7	4
543-8101-002	6-1-3	2
543-8116-000	6-1-6	2
544-0779-004	6-2-10	2
547-3631-002	6-2-25	1
547-3632-002	6-3-21	1
	6-5-13	1
	6-5-13A	1
547-3633-002	6-2-3	1
547-3634-002	6-2-9	1
547-3639-002	6-2-19	1
547-3641-002	6-4-18	1
547-3642-003	6-4-71	1
547-3647-004	6-2-6	1
547-3649-004	6-2-8	1
547-3651-005	6-3-75	1
547-3653-005	6-4-73	1
547-3654-002	6-5-26	1
547-3656-002	6-2-11	2
547-3657-002	6-2-22	1
547-3658-003	6-5-3	1
547-3659-003	6-4-49	1
547-3660-003	6-4-50	1
547-3661-003	6-4-51	1
547-3662-003	6-4-52	1
547-3663-003	6-4-53	1
547-3664-003	6-4-36	1
547-3666-003	6-3-15	1
547-3667-003	6-3-2	1
547-3670-003	6-3-71	1
547-3671-003	6-3-35	1
547-3672-003	6-5-2	1
547-3682-006	6-1-7	1
547-3686-006	6-1-6	1
547-3687-006	6-1-5	1
547-3690-004	6-2-5	1
547-3692-000	6-5-41	1
547-3693-000	6-3-71	1
547-3694-000	6-2-28	1
	6-3-	RF
547-3695-003	6-2-4	1
547-3696-003	6-2-1	1
547-3699-003	6-2-7	1
547-3701-003	6-5-35	1

NUMERICAL INDEX

PART NUMBER	FIG - ITEM	TTL REQ
547-3702-000	6-2-23	1
547-3703-000	6-5-40	1
547-3704-000	6-2-30	1
	6-5-	RF
547-3705-000	6-2-29	1
	6-4-	RF
547-3706-000	6-1-9	1
	6-2-	RF
547-3707-002	6-5-25	2
	6-5-26	1
547-3708-003	6-5-36	1
547-3712-002	6-5-33	1
547-3718-002	6-5-32	1
547-3720-003	6-5-1	1
548-1379-002	6-1-4	2
549-5084-002	6-2-20	1
	6-5-37	1
557006U2P034R	6-4-69	1
609-0573-001	6-1-6	1
747RBLACK	6-1-2	2
757-4787-000	6-1-1	1
811A	6-2-12	1
	6-2-13	1
	6-2-14	1
	6-2-15	1
921-0018-000	6-5-7	1

PART NUMBER	FIG - ITEM	TTL REQ

6.4 REFERENCE DESIGNATION PARTS LIST

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
B1	6-2-26	11647
CR1	6-3-41	1N1492
CR1	6-3-41	1N4005
CR10	6-3-44	1N1492
CR10	6-3-44	1N4005
CR11	6-3-55	1N1492
CR11	6-3-55	1N4005
CR12	6-3-58	1N1492
CR12	6-3-58	IN4005
CR13	6-3-56	1N1492
CR13	6-3-56	1N4005
CR14	6-3-54	1N4005
CR14	6-3-54	1N1492
CR15	6-3-51	1N1492
CR15	6-3-51	1N4005
CR16	6-3-47	1N1492
CR16	6-3-47	1N4005
CR17	6-4-1	1N458
CR17	6-4-1	FD100
CR18	6-4-3	FD100
CR18	6-4-3	1N458
CR19	6-4-2	1N458
CR19	6-4-2	FD100
CR2	6-3-40	1N1492
CR2	6-3-40	1N4005
CR20	6-3-30	1N540
CR20	6-3-30	1N4005
CR3	6-3-67	1N1492
CR3	6-3-67	1N4005
CR4	6-3-60	1N1492
CR4	6-3-60	1N4005
CR5	6-3-63	1N1492
CR5	6-3-63	IN4005
CR6	6-3-64	1N4005
CR6	6-3-64	1N1492
CR7	6-3-70	1N4005
CR7	6-3-70	1N1492
CR8	6-3-37	1N1492
CR8	6-3-37	1N4005
CR9	6-3-45	1N1492
CR9	6-3-45	1N4005
C1	6-4-14	36C175A
C10	6-3-27	D34441
C12	6-3-14	D33647
C13	6-4-55	CM05ED470J03
C14	6-4-41	CM05FD101J03
C15	6-2-16	36C175A
C16	6-5-8	DA172-062CB
C17	6-4-7	36C175A
C18	6-4-69	557006U2P034R
C19	6-4-68	CM05FD271J03
C2	6-4-10	36C175A
C20	6-4-13	36C175A
C21	6-4-15	36C175A
C22	6-4-20	CM05FD221J03
C23	6-4-21	CM05FD221J03
C24	6-4-26	CM05FD221J03
C25	6-4-25	CM05FD221J03
C26	6-4-16	36C175A
C27	6-4-6	36C175A
C28	6-4-12	36C175A
C29	6-4-11	36C175A
C3	6-3-9	D33647
C30	6-4-9	36C175A
C31	6-5-31	DA858-003
C32	6-5-34	154-2
C33	6-5-7	921-0018-000
C34	6-5-9	DA172-062CB
C35	6-5-15	327-029X5T0102Z
C36	6-5-17	327-029X5T0102Z
C37	6-5-18	327-029X5T0102Z
C38	6-5-21	327-029X5T0102Z
C39	6-5-20	327-029X5T0102Z
C4	6-3-25	2DDH63N103M
C40	6-5-19	327-029X5T0102Z
C41	6-5-16	327-029X5T0102Z
C42	6-5-22	327-029X5T0102Z
C43	6-5-23	327-029X5T0102Z
C44	6-3-39	40C73A1
C45	6-3-38	40C73A1
C46	6-3-66	40C73A1
C47	6-3-61	40C73A1
C48	6-3-62	40C73A1
C49	6-3-65	40C73A1
C5	6-3-10	D33647
C50	6-3-69	40C73A1
C51	6-3-36	40C73A1
C52	6-3-43	40C73A1
C53	6-3-42	40C73A1
C54	6-3-52	40C73A1
C55	6-3-59	40C73A1
C56	6-3-57	40C73A1
C57	6-3-53	40C73A1
C58	6-3-50	40C73A1
C59	6-3-46	40C73A1
C6	6-3-26	2DDH63N103M
C60	6-4-47	CM05ED820J03
C62	6-4-48	DM15F511J300WV4CR
C63	6-4-23	CM05FD221J03
C64	6-4-24	CM05FD221J03
C65	6-4-45	CM05FD181J03
C66	6-4-19	CM05FD331J03
C67	6-4-27	CM05FD221J03
C68	6-4-22	CM05FD221J03
C69	6-4-43	CM05FD151J03
C7	6-3-13	D33647
C70	6-4-46	CM05FD181J03
C71	6-5-24	327-029X5T0102Z
C72	6-4-56	CM05ED270J03
C72	6-4-56	CM05ED470J03
C73	6-4-40	CM05FD101J03
C74	6-4-8	36C175A
C75	6-4-44	CM05FD151J03
C76	6-4-42	CM05FD101J03
C8	6-3-11	D33647
C9	6-3-12	D33647
F1	6-3-16	314008
F2	6-3-18	314008
J1	6-4-37	201-11-01-018
J2	6-4-38	201-11-01-018
J3	6-4-39	201-11-01-018
J4	6-4-35	M39012-04-0002
K1	6-4-5	KR2916
L10	6-5-36	547-3708-003
L11	6-5-6	34103

REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
L12	6-5-28	Z14
L13	6-5-10	240-0174-000
L14	6-4-49	547-3659-003
L15	6-4-50	547-3660-003
L16	6-4-51	547-3661-003
L17	6-4-52	547-3662-003
L18	6-4-53	547-3663-003
L19	6-4-28	240-0173-000
L3	6-4-54	240-0189-000
L3	6-4-54	240-0186-000
L8	6-4-17	18-401
L9	6-5-32	547-3718-002
M1	6-5-5	458-0592-00
R1	6-4-67	RCR20G472KS
R10	6-3-72	RN65D1781F
R11	6-3-68	RN80B4024F
R12	6-4-4	PW7-2000-10PCT
R13	6-3-3	CM28047
R15	6-3-28	RCR42G103KS
R16	6-4-70	376-0205-000
R17	6-2-17	RCR42G100KS
R18	6-2-18	RCR42G100KS
R19	6-4-66	RCR20G393KS
R2	6-3-8	CM28047
R20	6-4-65	RCR20G393KS
R21	6-4-29	RCR32G470KS
R22	6-4-30	RCR32G470KS
R23	6-4-32	RCR32G470KS
R24	6-4-31	RCR32G470KS
R28	6-4-34	RCR42G390KS
R28	6-4-34	RCR20G390KS
R3	6-3-6	CM28047
R4	6-3-7	CM28047
R5	6-3-4	CM28047
R6	6-3-5	CM28047
R7	6-3-49	RCR42G152KS
R8	6-3-48	RS5-41-1F
R9	6-3-29	RCR42G470KS
S1	6-4-64	214093LK1
S2	6-5-39	0811-113010109
S3	6-3-73	215870F1
S4	6-5-38	PA230-1005
S5	6-5-13	547-3632-002
S6	6-3-21	547-3632-002
S7	6-5-13A	547-3632-002
TB1	6-3-31	1542A
TB2	6-3-32	1542A
TB3	6-3-33	1909
TB4	6-4-63	1542A
TB5	6-4-62	1520A
TB6	6-4-61	1520A
T1	6-3-1	E13648
V1	6-2-15	811A
V2	6-2-14	811A
V3	6-2-12	811A
V4	6-2-13	811A
XF1	6-3-17	HKPHJRZZ
XF2	6-3-19	HKPHJRZZ
XV1	6-4-57	49RSS4
XV2	6-4-58	49RSS4
XV3	6-4-60	49RSS4
XV4	6-4-59	49RSS4
Z1	6-5-26	547-3654-002
Z2	6-5-26	547-3707-002

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER

section 7
illustrations

Note

The period covered by this instruction book is April 1963 to the date on the book title page.

Each equipment circuit change made during the period of time covered by this instruction book has the change identified on the schematic diagram and in the parts list. Circuit changes are flagged on the schematic with a change identifier (⇦) pointed at the component, group of components, or a circuit enclosed by a broken line. The identifier indicates that the component or circuit has been changed, and the number in the identifier indexes the specific change. If several components are affected by the same equipment change, there may be more than one identifier with the same index number.

The indexed changes are listed on schematic changes and equipment differences sheets inserted in front of the schematic sheet to which they are indexed.

The identifier-description describes the differences and reasons for changes and includes a recommendation as to what action should be followed during repair or maintenance.

The reason for identifying changes in this manner is that the manufacturer has "scrambled" serial numbers on his amateur products during the period covered by this instruction book. Therefore, changes cannot be identified by conventional methods.

Caution

None of the changes have been made because the equipment has failed to meet the equipment specifications; the changes are not recommended for all units. Equipment changes have been made to improve performance or reliability of radios that are built using different fabrication processes. These changes will not necessarily improve the operation of your equipment and in some instances, if changes are made, will degrade the performance or possibly damage the radio.

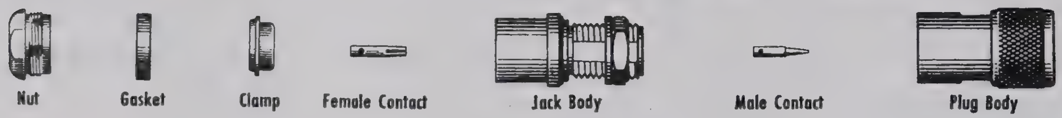
The change identifier number is also used in the parts list section of this instruction book. However, in the parts list the identifier is enclosed in slashes (for example, /6/) instead of the ⇦ symbol.

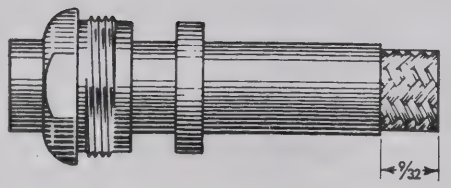
A list of service bulletins that have been written against the 30L-1 RF Linear Amplifier follows. These service bulletins were factory installed in units about the time the bulletins were issued and have been installed in all units since that date.

SERVICE BULLETIN NO	DESCRIPTION	DATE ISSUED
1	Wiring changes required to convert the 30L-1 from 115- to 230-Vac operation.	8-21-61 (Revised 8-21-67)
2	Correct backward deflection of ALC meter.	2-20-62
3	Eliminate pilot-light fluctuation with rf excitation.	4-2-62

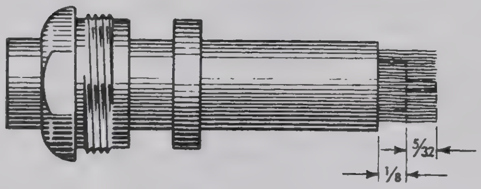
Connector Assembly Instructions

IMPROVED SERIES N

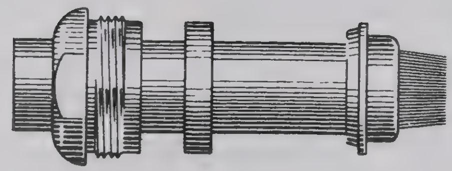




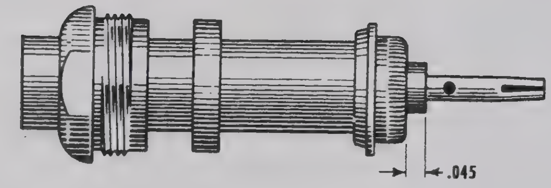
Place nut and gasket over cable and cut off jacket 9/32″ from end.



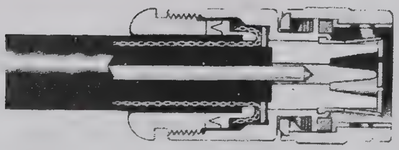
Comb out braid and fold out. Cut off cable dielectric flush 1/8″ from end of jacket.



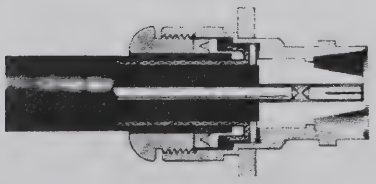
Pull braid wires forward and taper toward center conductor. Place clamp over braid and push back against cable jacket.



Fold back braid wires as shown, trim to proper length and form over clamp as shown. Solder contact to center conductor.



Insert cable and parts into connector body. Make sure sharp edge of clamp seats properly in gasket. Tighten nut.



Connector Assembly Instructions
Figure 7-1

SCHEMATIC CHANGES AND EQUIPMENT DIFFERENCES

IDENTIFIER	DESCRIPTION
A1	Capacitor C4 changed location. Was located between TB1-3 and TB1-4. If this component is replaced, it is recommended that it be placed as shown on the schematic diagram.
A2	Switch S7 changed location. Was located between choke L12 and ground. This change protects choke L13 in case switch S7 fails. If this component is replaced, it is recommended that it be placed as shown on the schematic diagram.
A3	Capacitor C72 was changed from 47 to 27 pF to improve ALC performance. If this component is replaced, it is recommended that the 27-pF value be used.
A4	Choke L3 was changed from 39 to 22 μH to raise the self-resonant frequency of L3. If this component is replaced, it is recommended that the 22-μH value be used.
A5	Diodes CR17, CR18, and CR19 were changed from type 1N458 to type FD100 to improve rf detection. If any, or all, of these diodes are replaced, it is recommended that type FD100 be used.

30L-1 Schematic Diagram
Figure 7-2 (Sheet A)

COLLINS AUTHORIZED AMATEUR SERVICE AGENCIES

ALABAMA

Beddow Engineering Services
1501 Seventh Street S. E.
Decatur, Alabama 35601
(205) 353-6329

ARIZONA

Amateur Radio Electronics
2809 E. Mercer Lane
Phoenix, Arizona 85028
Everett Fliegel
(602) 992-8113

CALIFORNIA

Ham Radio Outlet
999 Howard Avenue
Burlingame, California 94010
(415) 342-5757

Henry Radio Company
P. O. Box 64398
11240 W. Olympic Blvd.
Los Angeles, California 90064
(213) 272-0861

Henry Radio Company
P. O. Box 4290
931 N. Euclid Street
Anaheim, California 92801
(714) 772-9200

FLORIDA

Grice Electronics, Inc.
P. O. Box 1911
320 East Gregory
Pensacola, Florida 32502
(904) 434-2358

Mays Electronics Corp.
666 East 25th Street
Hialeah, Florida 33013
(305) 836-4146

The Ham Shack
Tel-Appliance Company
1966 Hillview Street
Sarasota, Florida 33579
(813) 955-7161

GEORGIA

Ack Radio Supply Company
554 Deering Road N. W.
Atlanta, Georgia 30309
(404) 351-6340

HAWAII

*Honolulu Electronics
819 Keeaumoku Street
Honolulu, Hawaii 96814
Attn: Tom Teruya
(808) 949-5564

KANSAS

Associated Radio Communications, Inc.
8012 Conser
Overland Park, Kansas 66204
(913) 381-5900

LOUISIANA

*Thomas J. Morgavi Electronics
P. O. Box 353
3409 West Metairie Ave. South
Metairie, Louisiana 70004
(504) 833-4106

MARYLAND

*Electronics Int'l Service Corp.
P. O. Box 1993
11305 Elkin Street
Wheaton, Maryland 20902
(301) 946-1088

MICHIGAN

Electronic Distributors, Inc.
1960 Peck Street
Muskegon, Michigan 49440
(616) 726-3196

MINNESOTA

Electronic Center, Inc.
127 Third Avenue N
Minneapolis, Minnesota 55401
(612) 338-5881

MISSOURI

Ham Radio Center
8342 Olive Boulevard
St. Louis, Missouri 63132
(314) 993-6060

MISSISSIPPI

Coker Electronic Service
724 Lawrence Road
Jackson, Mississippi 39206
(601) 362-9843

NEW JERSEY

*Communications Service Co.
23 Willow Road
Maple Shade, New Jersey 08052
(609) 665-0358

NEW YORK

Harrison Radio Corp.
8 Barclay Street
New York, New York 10007
(212) 227-7922

NORTH CAROLINA

Freck Radio & Supply Co., Inc.
38 Biltmore Avenue
Asheville, North Carolina 28807
(704) 254-9551

OHIO

Component Services Co.
5403 Prospect Avenue
Cleveland, Ohio 44103
(216) 881-7404

Central Communications, Inc.
4672 Indianola Avenue
Columbus, Ohio 43214
(614) 267-4923

OREGON

*Portland Radio Supply Company
1234 S. W. Stark Street
Portland, Oregon 97205
(503) 228-8647

TEXAS

Douglas Electronics
1118 South Stapels
Corpus Christi, Texas 78404
(512) 883-5103

Electronic Center, Inc.
2929 North Haskell
Dallas, Texas 75204
(214) 526-2025

Howard Radio
4235 North First
Abilene, Texas 79603
(915) 677-1335

Madison Electronics Supply
1508 McKinney Avenue
Houston, Texas 77002
(713) 224-2668

UTAH

Dwyer's Communications
5455 Knollcrest Street
Murray, Utah 84647
(801) 262-4974

WASHINGTON

HCJ Electronics
8214 East Sprague Avenue
Spokane, Washington 99206
(509) 924-2343

WISCONSIN

*Amateur Electronic Supply
4828 West Fond du Lac Avenue
Milwaukee, Wisconsin 53216
(414) 442-4200

*Major Repair Center

Equipment may be also repaired at: Collins Radio Company
Newport Beach, California

6-15-72

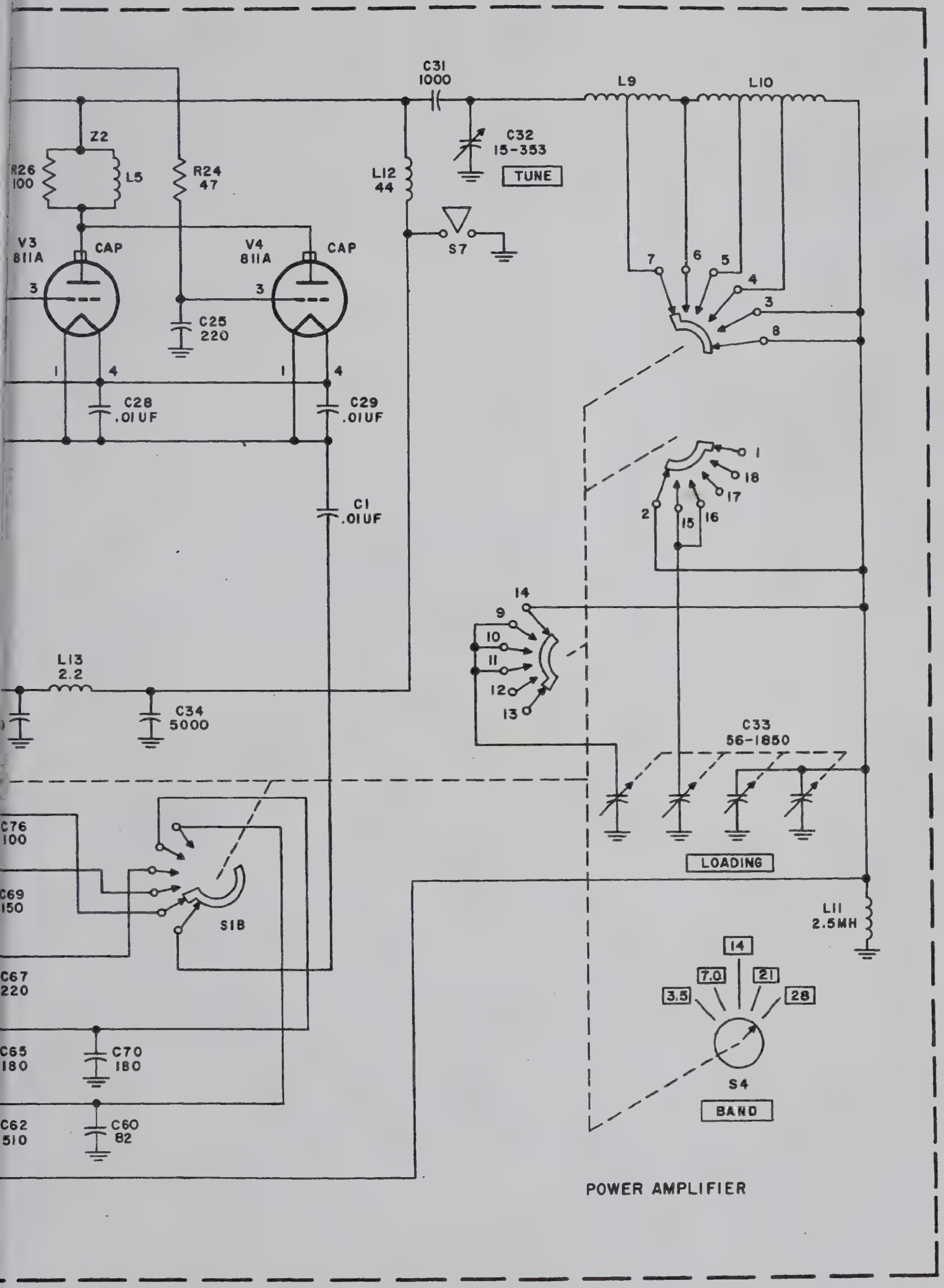
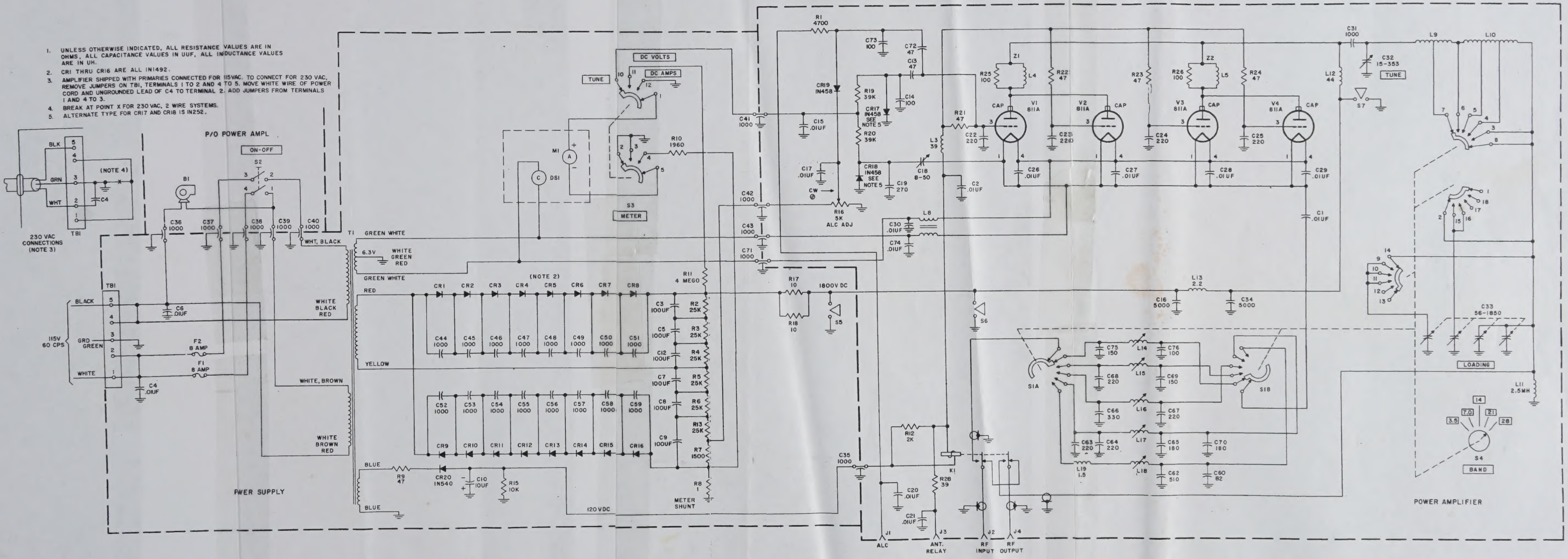


Figure 7-2. 30L-1 Schematic Diagram



1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES IN UUF, ALL INDUCTANCE VALUES ARE IN UH.
2. CR1 THRU CR16 ARE ALL IN1492.
3. AMPLIFIER SHIPPED WITH PRIMARIES CONNECTED FOR 115VAC. TO CONNECT FOR 230 VAC, REMOVE JUMPERS ON TB1, TERMINALS 1 TO 2 AND 4 TO 5. MOVE WHITE WIRE OF POWER CORD AND UNGROUNDED LEAD OF C4 TO TERMINAL 2. ADD JUMPERS FROM TERMINALS 1 AND 4 TO 3.
4. BREAK AT POINT X FOR 230 VAC, 2 WIRE SYSTEMS.
5. ALTERNATE TYPE FOR CR17 AND CR18 IS IN252.

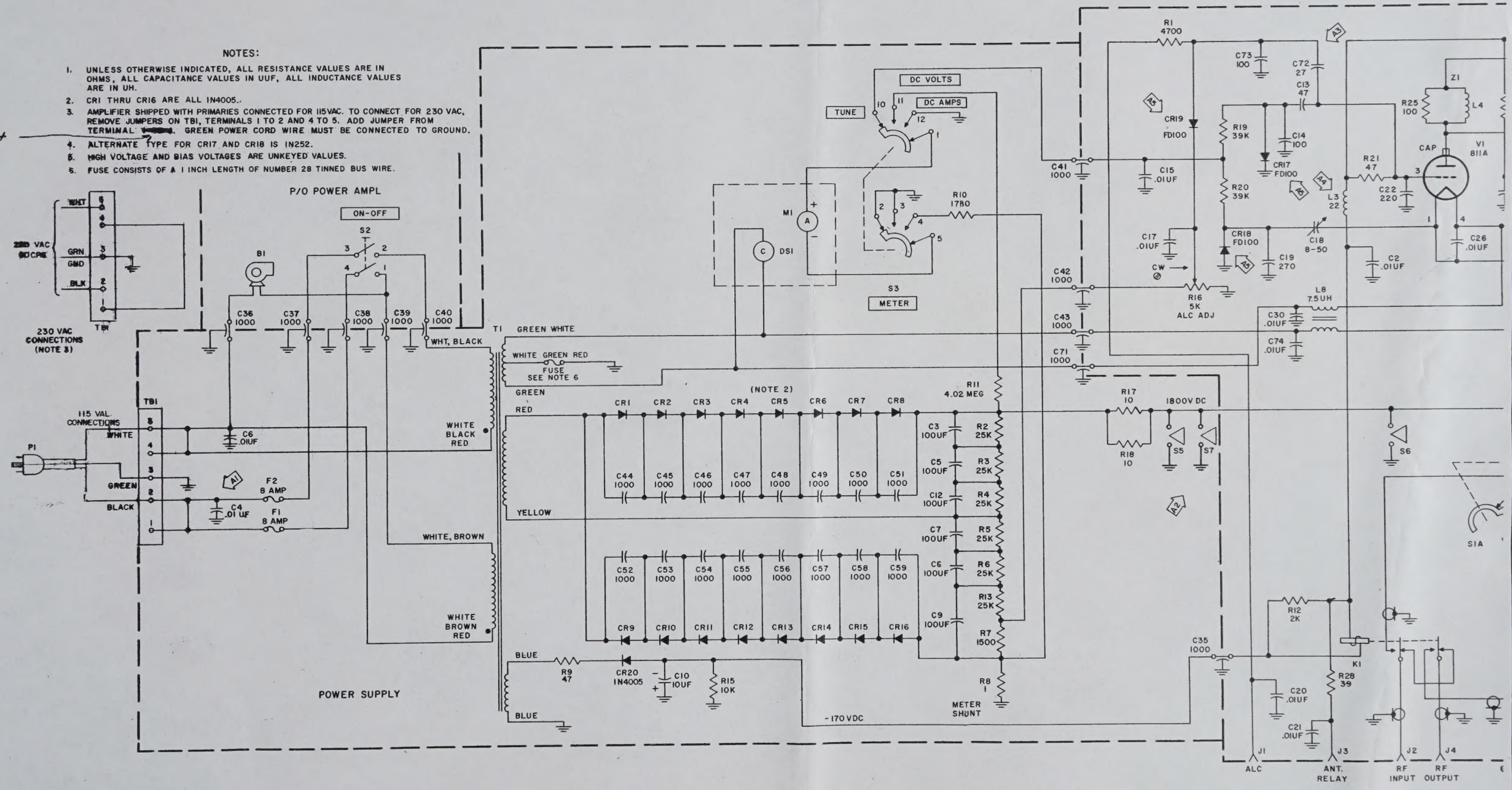
Figure 7-2. 30L-1 Schematic Diagram

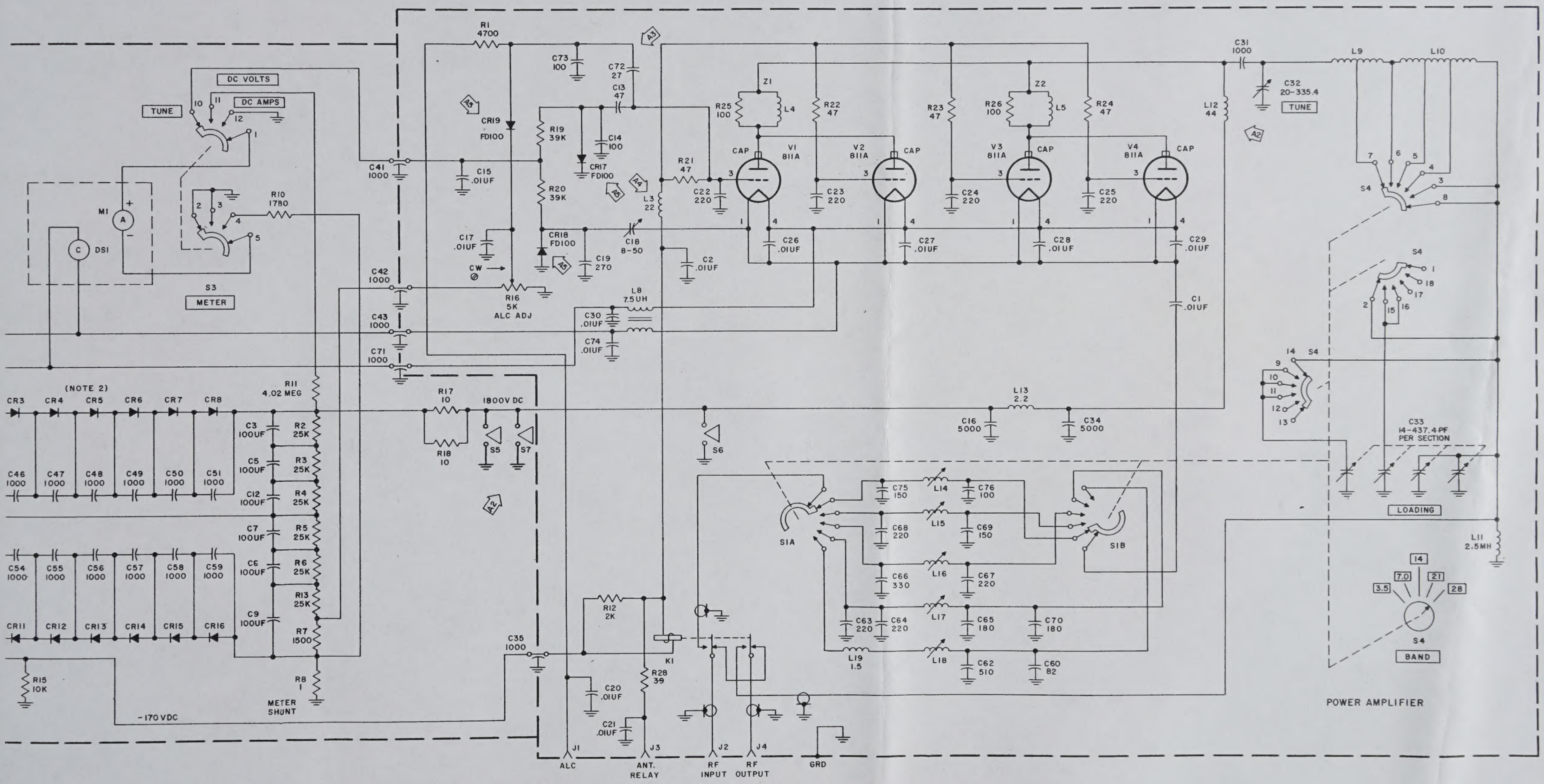
NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES IN UUF, ALL INDUCTANCE VALUES ARE IN UH.
2. CRI THRU CRI6 ARE ALL IN4005..
3. AMPLIFIER SHIPPED WITH PRIMARIES CONNECTED FOR II5VAC. TO CONNECT FOR 230 VAC, REMOVE JUMPERS ON TBI, TERMINALS I TO 2 AND 4 TO 5. ADD JUMPER FROM TERMINAL [redacted]. GREEN POWER CORD WIRE MUST BE CONNECTED TO GROUND.

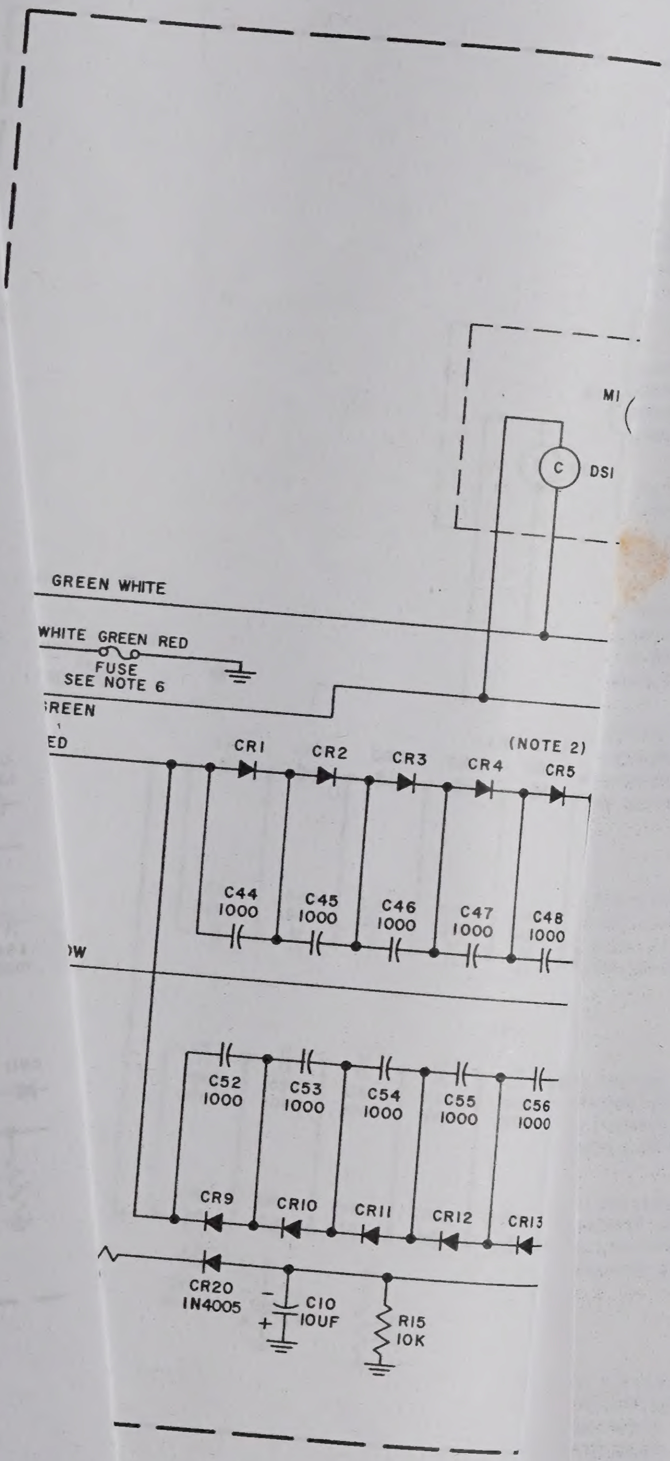
1 TO 4

4. ALTERNATE TYPE FOR CRI7 AND CRI8 IS IN252.
5. HIGH VOLTAGE AND BIAS VOLTAGES ARE UNKEYED VALUES.
6. FUSE CONSISTS OF A I INCH LENGTH OF NUMBER 28 TINNED BUS WIRE.





30L-1, Schematic Diagram
Figure 7-2


MI
C
DSI
GREEN WHITE
WHITE GREEN RED
FUSE
SEE NOTE 6
GREEN
ED
(NOTE 2)
CR1
CR2
CR3
CR4
CR5
C44 1000
C45 1000
C46 1000
C47 1000
C48 1000
OW
C52 1000
C53 1000
C54 1000
C55 1000
C56 1000
CR9
CR10
CR11
CR12
CR13
CR20 1N4005
C10 10UF
R15 10K